Three essays on the effects of budgetary policy in developing countries

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Université d'Auvergne Clermont-Ferrand I
Faculté de Sciences Economiques et de Gestion
Centre d'Etudes et de Recherches sur le Développement International (CERDI)

Trois essais sur les Effets de la Politique Budgétaire dans les Pays en Développement

Thèse nouveau Régime
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Chapter 1: General Introduction & Overview

1.1 Introduction

Fiscal policy along side with monetary policy is one of the main tools available to public authorities to intervene and influence the real economy. The recent financial crisis (started in 2008) has shown the importance of government intervention to stabilize and alleviate any threat on the economy. Indeed fiscal activism, after more than two decades of neo-classical and the "no fiscal dominance" paradigm, has come back on the top of government agendas in recent years. In both developing and advanced economies, IMF has called for fiscal stimulus combined with easing monetary policies in response to the global downturn. In a Staff Policy Notes (IMF, 2009), the IMF research department from a multi-country structural model finds that with the right policies, both emerging and advanced countries could support aggregate demand and restore economic growth. Such worldwide fiscal stimulus policy is believed to end the global crisis through the large multiplicative effects[1]. However the come-back of Keynesian ideas poses some challenges on which I will be back later in this section. Despite the renewal of interest on fiscal policy, its effects on economic activity still remain not well known.

As it is usually defined fiscal policy is the use of public spending and taxes to influence economic activity toward more expansion or contraction depending on the situation. All along history of economics, views and theories on the efficiency of fiscal policies have been most of the time contradictory.

The recourse to public finances as a tool to influence economic activity formally started during the great depression in 1929. Before that date, the budget had no economic role it was only dedicated to current spending of the central administration. Indeed during 1930s' depression some governments have started considering the budget as an economic policy tool. The analysis from the British economist John Maynard Keynes has given a theoretical foundation for such policies, showing that public spending and tax revenues

[1] In the same note, for countries with financing constraints (highly indebted countries or low fiscal resource endowed countries) the IMF has advised at least to keep unchanged public expenditures especially social ones.

are efficient tool to regulate economic cycles. In 1929 the recession was very severe, for instance in 1933 one American worker in every four was unemployed. Additional to that 25% unemployment rate, 20% of New York City school children were under weight and malnourished. In this context public intervention was quasi-compulsory and necessary. The US government announced a wide economic plan, the New Deal, to address these issues. In the first years the plan was concerned with relief (food and shelter for millions of indigents and unemployed). Then the policy shifted toward recovery (creation of state agencies such as National Recovery Act in 1933, and National Industrial Recovery Act).

Several arguments have been advanced to justify the use of fiscal policy as an economic policy tool. The first of these arguments has been the direct Keynesians ideas and their extensions.

J. M. Keynes, in his General Theory (1935), has identified two channels through which government budget could be considered as an economic policy tool. The first role for fiscal authorities is to ensure a better distribution of income. Greater income equality puts more money into hand of people with higher marginal propensity to consume (MPC) leading to increased consumption (Pressman, 1997). The second aspect of this theory argues that public spending was the principal mean available to protect the economy against fluctuations through the multiplicative effect. During the great depression and even after, the two Keynesian principles guided major public policies in the developed world and in new countries as well. For instance in the UK public spending jumped from 25% of GNP during pre-war period to more than 50% during mid-1970s. On the same vein, developing countries' public finances have also been characterized by high level of spending (weak fiscal revenues) and deficits since 1960s but unfortunately the expected results have not been always obtained.

On straight line with traditional Keynesian ideas, other authors developed arguments that are related to the important short-term social waste associated to business cycles. For such authors (e.g. Galí, 2005) business cycles induces important costs in terms of

economic efficiency[2] and output volatility. Going even further, it has been shown that the effects on the real economy of crises are not only limited to the short-term but there exist negative impacts even on the medium term prospects (IMF, 2009). Basically an empirical investigation from past major (financial and economic) crises demonstrated that after a downturn, there is little chance for the economy to retrieve its pre-crisis growth trend (*in WEO Chapter4, IMF 2009*). The changes in factors of production (capital and labor) and changes in their use (total factor productivity) explain largely the shift in medium-term output dynamics. Therefore to allow the economy to quickly recover from recession and mitigate mid-term loss in output dynamic, short-run demand management policies are to be implemented at the early stages of the downturn. To answer such inefficiencies and loss of mid-term output strong discretionary fiscal measures accompanied with accommodative monetary policies are advised.

Finally our last argument in favor of fiscal policy especially applies to developing countries where households cannot smooth their consumption due to liquidity constraints. In such situation business cycles reinforce the already high volatility of private final expenditures (Ozbilgin, 2010).

However (and despite all these arguments above) after almost forty years where public spending was considered as one of the most important tool for growth enhancement and against unemployment a new paradigm was born during late 1970s. Indeed in the 1970s, arose a depression in developed economies characterized by the cohabitation of high level of unemployment and inflation. From that date and until recently neo-classical ideas were dominant. The coming sections will continue this discussion and give details on the rationales and some of the mechanisms of fiscal policy for both Keynesian and neo-classical.

Fiscal policy in developing countries is especially important in terms of macroeconomic management. Despite this importance, fiscal policy in developing economies has been

[2] Chapter 4 will come back into more details on the inefficiencies related to business cycles. Especially Galí (2005) developed an indicator (this indicator is named "GAP" and chapter 4 will still provide details) that clearly give a measure of business cycles could keep the economy far from its potential level.

mainly discussed through the tax collection and "simple" accounting side. Therefore the coming chapters will cover this issue in a broader perspective.

The rational of this dissertation is at the end to be able to define some stylized facts for fiscal policies in developing countries (what has not been done). This would fill an important gap in the literature and afford us with a better knowledge on how fiscal policy could be more efficiently used.

This introductory chapter aims at giving an overview of the fiscal policy stance in developing countries. The first section provides definition and explanations on basic concepts and theories. The second section presents the objectives assigned to government budget, see whether these goals are reached and, if not, what could explain such situation. One finishes by presenting the relevance of this dissertation and a summary of its main contributing chapters.

1.2 Key Concepts and Measurement for Fiscal Policy

1.2.1 Definition of public sector: General government versus Central Government

As a measure for the public sector, the concept of "General government" instead of "central government" will be preferred. For developing countries a broad measure should be preferred since in developing countries several public entities might play an active fiscal role. Also a broad measure is necessary to capture the overall impact of fiscal variables on macroeconomic performance. Indeed state and local authorities and non-financial public enterprises owned by government are to be considered since they have an impact on government fiscal position. Additional to that, this category includes (when required) the quasi-fiscal operations of central banks and other financial institutions. These operations sometimes can serve same role as taxes or subsidies (for instance the central bank in some countries plays the role of banker to the government: interest rate subsidies etc.) and they can have a significant budgetary impact.

Therefore fiscal variables used all along this dissertation cover as wide as possible the public sector. The next step will be to identify ways to assess position and sustainability

1.2.2 Measuring and assessing fiscal sustainability

1.2.2.1 Fiscal balance indicators

Assessment of fiscal policy starts with the definition of right indicators on budget balance. Several measures of fiscal balance are used, each one of these giving a special picture and describing a particular situation of public finances. Therefore a single indicator gauging the public sector's net resource use does not exist.

The overall fiscal balance

It is the most commonly used indicator to assess the stance of fiscal policy (Khan & al. 2002). The overall budget balance is computed as the difference between revenue and grants, on one side, and expenditure and net lending on the other usually during 365-day period. The overall balance provides the advantage to gather information on the public sector borrowing requirement (PSBR hereafter). The PSBR variable is essential for developing countries since it helps to design financial support required from bilateral or multilateral partners for development. Moreover when stated in percent of GDP, overall balance give the exact impact of fiscal policy on the economy. For instance a declining balance (overall balance in percent of GDP) or growing deficit means that public authorities are running expansionary fiscal policy. Inversely declining deficit (or growing surplus) indicates that the fiscal stance is contractionary. However the overall deficit is not enough to measure the true effect of the fiscal stance on economic activity. This indicator presents some limits. Those shortcomings are threefold: overall deficit considers that impact on demand of all taxes and expenditures are identical, its endogeneity and finally the difference of impact depending on the source of financing (Khan & al. 2002). Alternative measures will be suggested hereafters.

Current & Domestic Balance

As said above one of the limit of overall balance is that all fiscal items have the same weight. In other words it considers that these different fiscal variables have an identical influence on global demand. However it is imaginable that different categories of taxes and expenditures could influence real economy in several different ways (Haavelmo 1954). Current deficit helps to overcome this issue, by allowing the assignment of weights for each fiscal items (spending or revenues) depending on their relevance to domestic economy. On the same vein, the domestic balance consists in assigning non zero weights to only those elements that directly and only affect the domestic economy. The idea behind that measure is that in a small open economy some fiscal transaction might not be fully felt on domestic economy.

These concepts still do not address the issue of endogeneity of the overall budget balance.

The cyclically adjusted balance

For analyst it is important to be able to define clearly the fiscal stance whether government is running expansionary or restrictive fiscal policy. This could be the result of a certain endogeneity since some expenditure might rise (such as social transfers) automatically in period of recession without any public intervention. Same situation in periods of economic boom tax revenues usually increase due to favourable economic environment. Therefore the overall balance does not reflect only the effect of fiscal policy on the economy but also the influence of business cycle on fiscal variables. The main issue becomes how to separate discretionary from automatic responses of fiscal policy? Calculating the cyclically adjusted balance for developing countries is especially challenging[3]. The main difficulty while computing this balance is that in developing countries automatic stabilizers are tough to determine: they are weak and not well known (Abdih & al., 2010). As in the forth chapter in this dissertation, this challenge is addressed

[3] Chapter 4 details the formula for cyclically adjusted balance and shows the solution preferred to calculated it.

through the direct estimation of potential values of public spending and government revenues and the cyclically balance just derives from these values.

Primary balance

The cyclically adjusted balance resolved only partially the issue of identifying discretionary fiscal measures. Simply because interest payment on government debt, that are an important non-discretionary item, is included in that balance indicators. Therefore when interest payments are removed from public expenditures this yields the primary balance (or cyclically adjusted primary balance).

Operational balance

In countries where inflation is high, this can negatively influence the accuracy of the overall balance. Indeed rising inflation can increase the overall deficit (as a percent of GDP) since it usually reduces real revenue: the so called Tanzi effect[4]. The operational deficit addresses this problem by excluding inflationary component of interest payments from the calculation (Landais 1998). Therefore operational balance gives the true stance that would prevail without high level of inflation. Hence this fiscal balance measure is mainly relevant for public authorities locally indebted in national currency.

These measures provide important indications on the fiscal policy stance and are necessary to assess the response chosen by authorities to influence economic activity. However these are only flow variables and one cannot assess the sustainability of the fiscal policy. Therefore one has to recourse to stock variables that will give a better sight on whether the current fiscal policy is not a threat for government solvency.

[4] The Tanzi effect is just the consequence of time lags in revenue collection. Additional to that effect, rising level of inflation causes changes in government liabilities by increasing interest payments and this induces higher overall deficit.

Fiscal Policy Stance: Solvency & Sustainability in developing countries.

As some authors underline (e.g. Horne 1991) it, fiscal sustainability involves determining whether the government can continue to pursue indefinitely its set of budgetary policies. The intuitive continuation from that is whenever the pursuance of the current policy will cause in the mid-term crisis or restructuration then that policy is not sustainable and needs to be amended. Another view would consist to argue that government are not as liquidity constrained as private agents therefore there is not an important hazard for public authorities to finance current expenditures by borrowing from future generations. However the debt crisis in 1980s in many developing countries and even the recent public finance crisis in peripherals European countries have demonstrated that there is a clear limit on the quantity public sector can borrow depending on present discounted value of future revenues (and estimated future growth performance).

As this section will show, the concepts of solvency and sustainability while very close define two different situations. The solvency concept simply requires that the present value of debt to be null at period t+N. The sustainability itself is a "reasonable" level for ratio between (usually) the level of debt and a flow of relevant resources (for example it can be tax revenues or export proceeds). For these ratios, a threshold of sustainability or a dynamic analysis can be considered to assess its sustainability (see infra).

Among the main macroeconomic concepts to assess fiscal solvency is the solvency condition. The solvency condition consists for the government to keep the present value of its spending program equal to its comprehensive net worth[5] (Bean & Buiter 1987). More formally a public sector is solvent when the private discounted value of future primary surpluses is at least equal to the value of its outstanding stock of debt (Khan & al. 2002). The following equations demonstrate this identity:

[5] The comprehensive net worth includes seigniorage, net privatization proceeds and taxes. However in the solvency condition equation some simplicity reasons, it is usually assumed that net privatization proceeds and seigniorage financing are null.

$$PS_t = D_{t-1} i_t - \left(D_t - D_{t-1}\right) \qquad \textbf{(1)}$$

From equation (1), one can read that the end of period stock of debt $\left(D_t - D_{t-1}\right)$ increases if the primary surplus (PS_t) is smaller than interest payments during the period ($D_{t-1} i_t$).

On the same vain (as Landais 1998 and Khan & al. 2002) if one transforms equation (1) it gives[6]:

$$d_t = \delta^{-1} ps_{t+1} + \delta^{-2} ps_{t+2} + ... + \delta^{-N} ps_{t+N} + \delta^{-N} d_{t+N} \qquad \textbf{(2)}$$

From (2): the public sector is solvent only if the present discounted value of future primary surpluses is at least equal to the value of its outstanding stock of debt (Landais1998 and Khan 2002). In other words the amount of debt should be null at the end of the period meaning that government cannot recourse to Ponzi (or Madoff) game.

The direct consequence for any government would be as soon as this condition is not satisfied to make any efforts necessary to reduce its primary deficit. But as long as the interest rate on government debt is lower than the country's output growth public sector does not have to worry (that much) about fiscal solvency, and even it can run large primary deficit.

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[6] From equation (1) after dividing both side by the nominal GDP one obtains the following expression: $d_t = \left(1+i_t\right) d_{t-1} (Y_{t-1} / Y_t) - ps_t$: Y= nominal GPD, ps_t is PS/Y and d refers to D/Y. Knowing that nominal interest rate is real interest rate times inflation rate (π_t)one has: $(1+i_t) = \left(1+r_t\right)\left(1+\pi_t\right)$. Also GDP growth ($Y_t / Y_{t-1}$) is defined (Khan& al., 2002) as $\left(1+\hat{y}_t\right)\left(1+\pi_t\right)$ and with $\delta_t = \left(1+r\right) / \left(1+\hat{y}\right)$, the law of motion for d_t will be: $d_t = \delta d_{t-1} - ps_t$. After solving the previous equation one obtains equation (2).

As Buiter (1985) argues, the main issue with the solvency condition as a measure for fiscal solvency is the endogeneity of key variables (output growth, interest rates, investment behavior etc…), so that output growth can affect public expenditures and revenues as well as interest rates (while solvency condition assumes that future primary balances, interest rates and growth rate are independent). Therefore in order to provide a "relevant" assessment for the current fiscal stance sustainability, Buiter (1985) proposed the constant-net-worth deficit (CNW). The CNW deficit concept considers that current government spending path is sustainable if it keeps the government's net worth constant on ex ante basis Buiter (1985). Olivier Blanchard has also proposed several measure of fiscal sustainability but they are still under the criticism made by Buiter since any of them addresses the issue of endogeneity. For instance the primary gap indicator (Blanchard 1990) which he defined as the primary surplus required to stabilize the debt-to-GDP ratio, given the projected paths of the primary balance, the real interest rate, and output growth. Hence and according to such indicator whenever there is a gap between the present value of future primary deficits required to stabilize the debt-to-GDP ratio and the current balance a fiscal adjustment is necessary[7].

When it comes to measure fiscal policy stance sustainability in developing countries, despite such interesting theoretical indicators, the lack of knowledge about countries' debt and genuine financial capacities arise. Some authors (e.g. De-Piniés 1989) argued that due to that fact (weak knowledge on the primary deficit, growth and interest rates paths) debt-to-exports ratio have been much more preferred to assess debt sustainability and creditworthiness. Hence since early 1990s total debt-to-exports ratio has been increasingly used as a debt sustainability indicator by country's financial partners. However it raises the question of what should be the right level for such ratio that would ensure fiscal sustainability and creditworthiness. A first threshold of 2 (200%) has been cited as the minimum in order to restore creditors confidence and ensure fiscal sustainability. In 1996

[7] In the same paper Blanchard (Blanchard 1990) also submits the idea of a tax gap indicator. As previously this indicator consists in the tax-to-GDP ratio necessary to stabilize the ratio of outstanding debt-to-GDP. And as the primary gap the endogeneity of growth rate, real interest rates and public expenditure path remains unsolved.

following the Heavily Indebted Poor Countries[8] (HIPC) initiative 200 to 250% (debt/export) was identified as the threshold for debt sustainability. Above these levels analysts believe that developing countries could not repay their debt without major internal social consequences. As some authors underline it, the choice for a sustainability threshold is very often a subjective matter, since a ratio less than 2 does not guarantee that government is always able to repay its debt and that creditors are confident on that country. Even tools like Debt Sustainability Assessment[9] (DSA) jointly developed by world bank and IMF to assess debt sustainability in low and middle income countries does not appear that rigorous since depending on the forecasting assumptions a country's debt can be either or not sustainable (Moisseron & Raffinot 1999)[10]. From that point, De-Piniés 1989 suggested that, since no single number can convey much information about a country's capacity to repay its debt, the dynamic of debt-to-exports ratio should be preferred. Indeed a ratio increasing without limit might be the "right" signal for both an unsustainable debt and balance of payments.

Since the ultimate objective of fiscal policy stance sustainability analysis is to see whether there is no threat on its future payment capabilities the path of debt-to-GDP over time might be more relevant. Even with a ratio superior to 250% a country can be still solvent if its balance of payment and its debt level diminish over time.

The brief analysis on fiscal sustainability (and solvency) has shown that the response to such question remains not clear cut. However after shedding light on these different concepts, one can formulate policy recommendation. The first thing for a country is that

[8] The HIPC is an international initiative launched in 1996 by International organizations (IMF & World Bank and expanded to other development partners) aiming at reducing the debt burden for poor countries. To be eligible and see the unsustainable part of its debt forgiven a country has to meet some conditions. Among other conditions the "candidate's" debt must have reached an unsustainable debt burden. Also the country should have started to implement sound macroeconomic policies and developed a Poverty Reduction Strategy Paper.

[9] The DSA is a framework aimed at continuously monitoring the low income countries' debt and assesses its sustainability. The DSA ensures that poor countries make the necessary effort to reach the Millennium Development Goals without creating future debt problems.

[10] For instance Burkina Faso despite a relative low level of debt, the DSA concludes that its debt was unsustainable.

even if it has an growth rate higher than real interest rates (on debt), this should not be considered as a signal for increasing debt without limit. A direct consequence could be that increasing debt might push up interest rates very leading to difficult fiscal situations. Also the analysis developed earlier (lead by De-Piniés 1989) arguing that the more important is the dynamic for debt ratios (debt-to-GDP or debt-to-export) should be interpreted carefully by deciders. A high ratio may affect the private sector's perception of the government's ability to meet its budget constraint consistently. This may push interest rates and risk premiums upwards.

Next, the theoretical foundation for fiscal activism will be discussed and the issue of the role for fiscal policy in developing countries will be addressed.

1.3 Fiscal Policy in developing countries: Objectives, theoretical foundations and limits to its efficiency.

The common situation in many developing countries is the huge needs in terms of poverty alleviation, output growth, investments and more generally macroeconomic stabilization. In this context, the Millennium Development Goals (MDGs) rationale is to provide with a strategic framework that aims at reducing poverty in developing countries. Some key sectors such as education, health, environment and public finance have been identified as vectors for sustained development in least developed countries. To reach the MDG's objectives fiscal policy plays an essential role. Indeed better knowledge of fiscal policies mechanisms will enhance public spending (by telling authorities which type of spending should concentrate their efforts) efficiency and sound budgetary policies will avoid returning two or three decades backward if debt is kept at sustainable levels.

A good knowledge of developing countries' structural characteristics of their economy will make it easier to understand the importance (and the challenges) that public finances face in developing countries.

1.3.1 Objectives

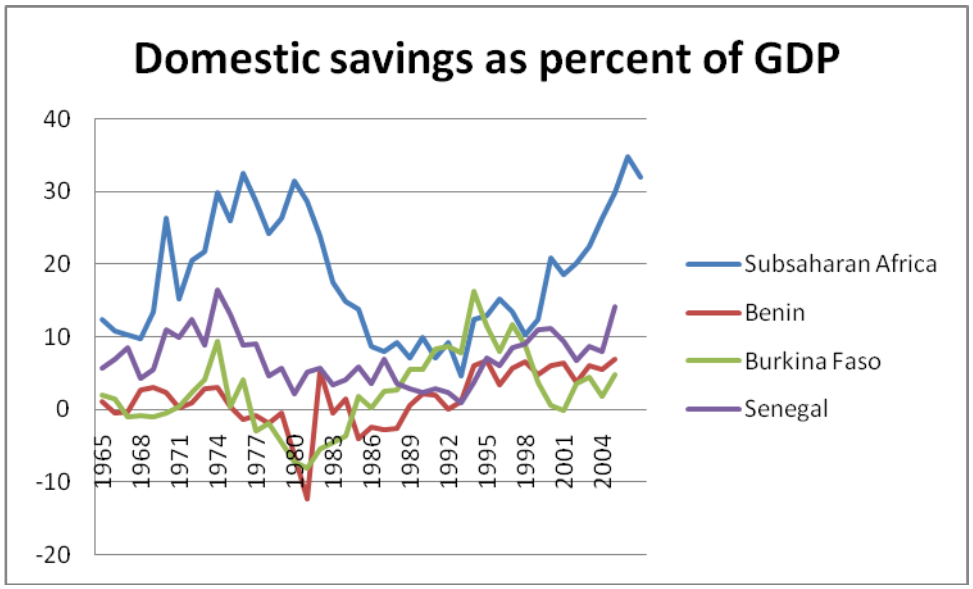
Many developing countries face the problem of a weak level of national savings. In such situation, the scarcity of savings usually causes a drought in terms of funds necessary to ensure investment and sustainable growth in the economy. For instance for developing African countries (Fig1.1, except South Africa) savings (in percent of GDP) have been progressing in a very erratic way and since 1960s remained under 20% of GDP for most countries[11]. Therefore the public sector remains the main viable investor agent in such economies.

Additional to that structural fact that remained all along the past decades, there was a theoretical argument defending the idea that fiscal policy has to be the most important engine for private saving. Considering that economic growth is the direct result of capital accumulation, some analysts (influenced by growth models of Harrod & Domar types) argued that the main role for fiscal policy was to encourage private savings and "mobilize" and add to these savings its own "mobilization" (Tanzi, 1976). To achieve such objective in line with these theories, the unique tool available to developing countries' governments was their budget and tax policies.

Another structural aspect of developing countries' economies challenging their public finances is the poverty and the private sector weakness.

[11] These figures are to compare with the 37% saving rates in China, 37%, Singapore, and 34% for other non OECD high income countries.

Fig1.1: National Savings in a sample of developing countries



Source: WDI.

For instance a country like Burkina Faso is among the poorest in the world with GDP per capita at around 400USD, with almost 50% of the population living with less than one dollar per day, 77% of adult are illiterated and the country is ranked at 173th (over 177) on the HDI scale. In such economy, the role of public finances (and support from international aid) becomes vital to alleviate poverty.

1.3.2 Theoretical foundations

Several and sometimes contradictory arguments and theories have been developed to justify or criticize the use of public finances as a tool to achieve development objectives in both developing and advanced countries. Depending on the time period a school of thinking pro or against fiscal activism dominated the debates.

Both Keynesian and Classical view on fiscal policy have been developed earlier, therefore will start by presenting here the "third" view on fiscal policy effects.

The "third" theory, the Ricardian equivalence (Barro 1974)[12] states that fiscal policy has no influence on the real economy. Basically in a "Ricardian world" any reduction of current taxes immediately induces a (exactly) same size increase of private saving. Therefore private consumption remains unchanged and the fiscal stimulation remaining without any significant positive result. However this theory relies on a certain number of assumptions that are not always true. The main assumptions are presented and discussed below:

- infinite horizon: individuals anticipating future tax increase and adjusting their savings straightaway, following a lowering of current taxes, supposes that these individuals have an infinite horizon. As Diamond (1965) underlines it, individuals usually live only two periods and their utility depends only on their consumption. In such situation reducing taxes through debt will solely profit to current active generations since the burden of the debt will be supported by future generation. To that criticism, Robert Barro responded arguing that the motive for current generation increase their savings after a tax cut is rather for altruism: parents taking advantage from the tax cut to leave more heritage to their offspring (toward future generations). Even that response does not alleviate the criticism since heritage can have many other motives than altruism. Among the motives for heritage on can cite two: insurance for current generation (insurance for parents to oblige their children to be more attentive toward them), avoid a loss of consumption due to potential longer life length.
- lump sum taxation: this assumption does not seem to hold since there might exist a gap between tax rates with distortive effects. If that today's tax cut is financed by issuance of debt, then on can considers that at maturity public authorities will need to increase the tax rate to face their obligations. This rearrangement of the timing of marginal taxation induces intertemporal substitution effects, alters behavior, and so seems to violate Ricardian equivalence (Seater, 1993).

[12] Since the Ricardian Equivalence theory was launched, any empirical evidence has been provided. This could be explained by the weakness of the assumptions underlying this view (Seater 1993).

- Risk-free environment: the Ricardian equivalence considers that individuals are insensible toward risk. But since future income is uncertain, current generations cannot know exactly the amount of heritage they will bequeath to their children. Therefore as soon as households are not indifferent between supplementary income received today after a tax cut and the income they will bequeath offspring, Ricardian equivalence does not hold anymore.
- No liquidity constraints: finally if there is a gap (even minor) between the rate at which government borrow and the one that private agents face, the Ricardian equivalence becomes irrelevant. Indeed if the States borrow at a lower rate (compare to household) any tax cut, financed by public debt, is perceived as a subsidy in favor of households.

The review of the most important assumptions underlying Ricardian Equivalence demonstrates how difficult it can be to prove its relevance for both developing and advanced countries. Especially the risk-free environment and the perfect credit market assumptions do not hold at all in developing countries. As said earlier credit constraint is so important in low income countries that smoothing consumption is very difficult.

Alongside these three theories, a fourth one has arisen: the so called anti-Keynesian fiscal effects. Giavazzi & al. (1996) first underline the existence of anti-Keynesian and non-linear effects of fiscal policy on private agents' behavior. In other words fiscal policy could induce anti-Keynesian effects. For instance a fiscal contraction (instead of inducing economic recession as predicted by Keynesians) might positively impact real economy through higher private consumption. On the other hand a fiscal expansion might have recessive impact on the economy through a decline in private consumption. These effects were first observed in some North European countries. Indeed during early 1980s, Denmark, Sweden and Ireland were experiencing weak economic performances and surprisingly they decided to implement fiscal adjustment in response to such situation. The outcome was as astonishing as the measure itself since it had an expansive effect on the economic activity. Given that this situation does not correspond to any predication of any known theory (Keynesian, neo-classical, Ricardian etc.), therefore this lead to the birth of a new theory arguing that there exists some non-linearities in the behavior of

agents depending on the situation of public finances. The channels have been identified as justifying such "counter-intuitive" effects of restrictive fiscal policies:

- Channel of supply: the composition of the fiscal adjustment influences the formation of agents' expectation on the supply side. For instance a fiscal contraction policy that consists in reducing payment arrears will be more effective in terms of growth enhancing. Also a fiscal restrictive policy reducing social spending will more growth enhancing than a cut in investment budget (Baldacci et al., 2005).

- Psychological threshold: the private agents' perception on fiscal sustainability is an important explanation of their own behavior. Indeed whenever tax payers consider that public debt has reached an unsustainable level, they consider that an adjustment (with higher tax rates) is very close and will be supported by their own generation (Sutherland, 1995).

- Channel of demand: through such channel, consumers consider fiscal contraction measures as future lower taxes. Consequently, they can reduce their savings and increase their expenditures, these facts ending with a stimulated economic activity (Giavazzi & Pagano, 1990).

However few studies have tested the non-linear effects of fiscal policies in developing countries. Among these Tanimoune & al. 2008, give evidences on the existence of "non-conventional" fiscal effects for Western African Economic and Monetary Union (WAEMU) countries. Relying on exogenous identification method of thresholds (Hansen 1999), they found that above a ratio of debt-to-GDP above 83% public interventions become anti-Keynesian (expansive fiscal adjustments). Their data show that the supply channel was the main explanation for that since for such economies fiscal adjustment very often means reduction of payment arrears. On the same vein, Patillo & al. 2002 also confirmed such non-linear effects of external debt in developing countries. Their first explanation is consistent with the supply channel, higher debt discouraging for investment (see supra). The second channel argue that in developing countries when level of debt is very high, government has less motivated to run policy reforms (trade liberalization,

privatizations etc.) that would enhance growth and efficiency. The reason being that public authorities might perceive that future benefits could be accrued by foreign lenders. Their estimations show that when debt-to-exports ratio is above 160 – 170 percent (or for debt-to-GDP ratio this becomes 35 – 40 percent). In terms of policy implication, reducing debt for developing countries for example in the HIPC framework could enhance output growth by half to 1%.

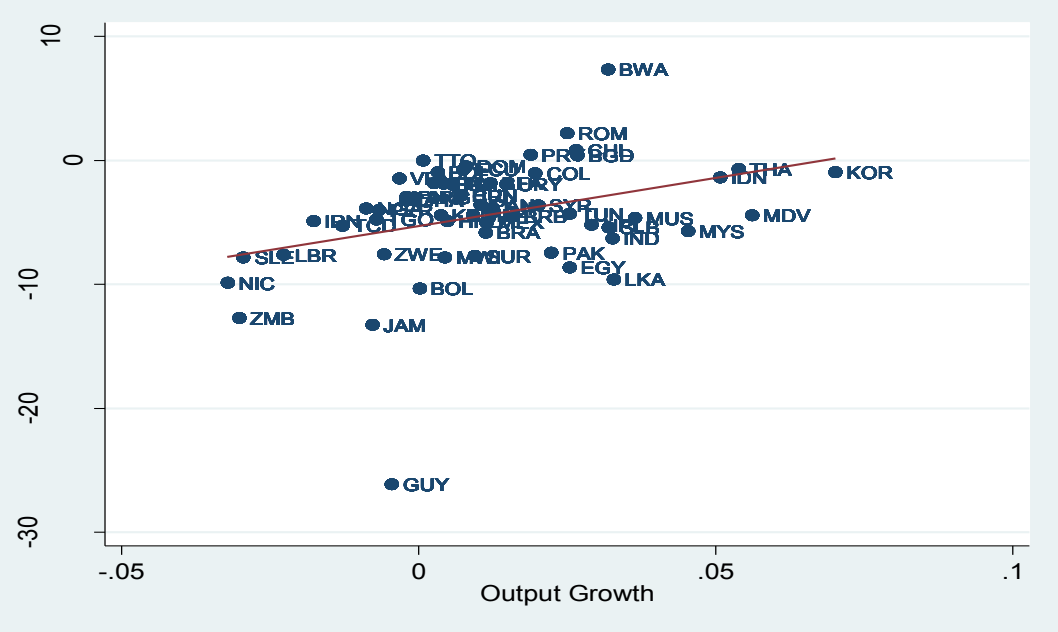
1.3.3 Limits to fiscal policy efficiency: political economy of budget deficit

Unfortunately, and very often it happens that theoretical predications to be different from the situation in the field in developing countries. Indeed for many developing countries fiscal budget deficits failed to enhance output growth and these deficits by the end of 1970s ended up with severe debts problems. For instance from Fig1.2, a simple scatter diagram, one can see that high fiscal deficit does not guarantee output growth for many countries (Bolivia, Nicaragua, Jamaica etc.). Fig1.3 shows a clear bias in favor of procyclical fiscal policies for a group of developing countries: higher output gap associated with increasing deficits (especially for Nicaragua, Malawi and Egypt (among others) where the situation is worst since relative important fiscal deficits coexist with weak growth performance). These observations demonstrate that fiscal policy is not that efficient in developing countries in terms of economic stimulation. Several arguments in the literature tried to explain such low efficiency of fiscal policies in developing countries, in what follows two ideas are presented.

- Structural Economic explanations: an important part of the literature on fiscal issues in low income countries considers the economic structure itself as the main limit against more efficient fiscal policies. To achieve its usual duties (provide public goods and services) and be able to have a significant influence on the economy, public sector needs resources. Unfortunately mobilizing both internal and external resources is a big challenge for developing countries. Among the

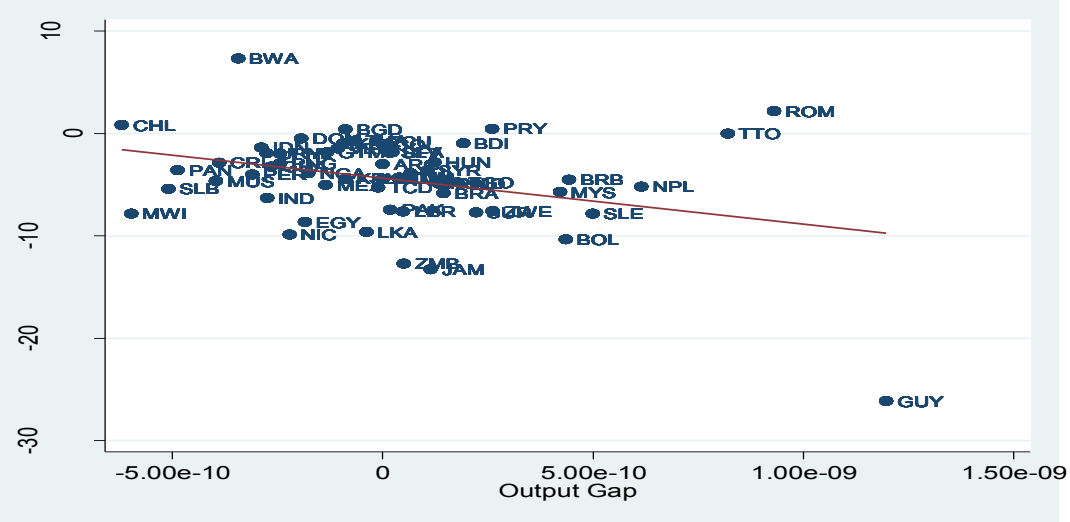
main three resources available to developing countries tax revenue is the best way to cover public spending (Brun & al. 2006)[13]. However government revenues in developing countries suffer from two limits: its instability and weakness. The instability of fiscal resources lowers the ability of authorities to keep sustained level of public (Chambas 2005). Additional to that, the instability of fiscal resources is a source of risk and higher vulnerability toward internal and external shocks. Recent studies (Combes & Saadi-Sedik 2006 and Collier & Gunning 1999) demonstrate the detrimental effects on fiscal budget balance and long-run growth of unstable budgetary revenues. Among the developing world and for the period 1970-2003, fiscal revenues instability is far more important for Sub-Saharan

Fig 1.2: Budget Deficit and Output Growth in Developing Countries: 1970-1995



[13] Brun & al. 2006 argue that given the constraints and uncertainties on seigniorage (inflation hazard) and grants, and the necessity to have to rely on future public revenues to be able to obtain loans, tax revenues are the most reliable resources.

Fig 1.3: Budget deficit and output gap in Developing countries: 1970-1995



African countries especially for the Least Developed Countries group (Brun & al. 2006). Now regarding the second characteristic of public revenues in the developing world, Brun & al. 2006 developed a new framework to assess its weakness. They define the *fiscal effort* as the difference between resources actually mobilized and the *potential fiscal revenues*. The *potential fiscal revenue* is an indicator representing public resources that depend on structural characteristic of the economy. The fiscal effort captures the extent to which the public sector feats its potential revenues (positive values of *fiscal effort* show up the fact that potential resources are fully used). Their results (Brun & al. 2006) shows that for developing countries, except for North-African and Middle East countries, *fiscal effort* is very low especially for Least Developed countries where it is negative. The dependence toward trade on primary commodities and international development aid are among the main causes of government revenues instability (Brun & al. 1999). The important share of the unregistered sector in developing countries (despite its important economic role: for instance in a county like Niger up to 50% of jobs created are in the unregistered sector, Chambas 2010) also contribute to weaken the revenues the public sector can raise. Therefore is becomes easily understandable why fiscal policy cannot play its role (of providing with public goods, stabilize macroeconomic fluctuations and alleviate poverty) in low income

countries. Fiscal decentralization, an area in public economics still growing up, has been considered as a credible answer to the limits that prevent fiscal policy from being more efficient. A closer fiscal management could help to raise more tax revenues and also encourage the delivery of timely and better public goods that population need.

- Political Economy of fiscal budget balance: inefficiencies of fiscal policies have been assigned to institutional weaknesses. Indeed due to agency problems, public authorities might try to influence citizens' perception and let them believe that the current government is highly competent. Pioneered by Nordhaus (1975), the political business cycle theory states that the renewal of public authorities might have an impact on the real economy. Indeed in countries where elections take place the incumbent in order to remain in power might increase its delivery of public goods. For developing countries it has been proved that political budget cycles do exist since during elections budget deficit worsens (Brender & Drazen 2005, Schuknecht 1996). Shi & Svensson (2006) found that on average budget deficit increase by 1% of GDP in election periods. Despite this evidence of political budget cycles presence in developing countries, some criticisms have raised two limits against that theory. The first one underlines the fact that these budget cycle models are not suitable to all developing countries and the situation is completely different according to the "deepness of the democracy". In countries where democracy is well established fiscal manipulations are punished by voters; in such countries citizens have a better sight on political economy instruments (Brender & Drazen, 2005 found a clear difference in the magnitude of political budget cycles between countries when one separates new democracies and established ones). The second limit is in straight line with our main concern: do political budget cycles undermine the efficiency of fiscal policy? One could reasonably imagine that, even if deficits increase sharply during a given period of time (this is referred here as elections), fiscal authorities might use these extra-spending for efficient and productive investments that would enhance future growth. Therefore one needs to go even further in the analysis to see the composition of public spending in election's period. Theoretically, Rogoff (1990)

developed a signaling model where political budget cycles are caused by information asymmetries. Since spending on public goods is a signal of the incumbent's competence (just before elections), the government will prefer to run current spending that are quickly visible to voters (usually for capital spending one gets the returns during the next period). These current spending mainly covers salaries, subsidies on final consumption goods etc. Block (2002) will confirm these theoretical predications from a panel of 69 developing countries that during election periods (a year before the race), incumbents increase current expenditures and usually capital ones are neglected or lowered. Finally it comes out that politico-economic cycle is another important limitation to fiscal policy efficiency in developing countries.

The upper analyses shed light on the causes (at least some of them) that explain the reason why fiscal policy in developing countries could not achieve its goals (see supra), or even be a counter-productive political economy tool.

This dissertation aims at contributing to the literature of fiscal policies in developing countries though focusing mainly on its effects and from there to be able to deliver policy recommendations in order to improve the matter. Before coming into details to the content of this dissertation, some other key uses and features of fiscal policy will be reminded.

1.4 Overview on the Rationale of the importance of Fiscal Policies in developing countries.

The previous sections help to understand some of the main characteristics and limitations of fiscal efficiency in developing economies. Even if it comes out from upper analysis that there exist several economic to political factors that refrain budget policies to reach their objective, one still need to further shed light on which specific areas fiscal policy might be helpful in the economic development process. To do so, a short review on theories on the linkages between public budget and specific economic aggregate will

be developed. Additional to that, it would be interesting for our purposes to investigate new policies being implemented in many low income countries and (both national and those accompanied by international development partners) aimed at improving public finances' efficiency.

1.4.1 Fiscal theory for price level

The fiscal theory of price level (FTPL) initiated by Leeper (1991) Sims (1994) and Woodford (1994), states that the quantity theory of money (QTM) is not enough to explain the dynamics of price level in a country. The main contribution for this theory is to argue that price level is determined by the level of public debt. For instance Turkey had experienced severe episodes of hyperinflation during early 1980s and late 1990 despite a relative monetary policy discipline (the seigniorage to GDP ratio have remained very low and were even declining)[14]. In countries were fiscal policy is non-Ricardian (namely public debt is not neutral) and if fiscal policy is dominant[15] then anti-inflationary monetary policies will be inefficient or worse they can be inflationary (Benhabib & al. 2001). Fiscal policy impacts on price level mainly through the wealth effects related to the issuance of domestic debt. As Woodford (2001) underlines it, in economies where fiscal policy is dominant primary deficit directly causes the level of public debt and the borrowing requirement to increase. If government mainly recourses to domestic borrowing it is most than likely cost of borrowings will go up (interest rates and risk premiums). Therefore a strong wealth effect can lead to inflation since domestic creditors feels wealthier. For the Turkish case additional to these channels detailed, the maturity rate on domestic debt keeps getting shorter and shorter during the mid-1980 and late 1990s, worsening the inflation pressure. Hence monetary policies especially inflation targeting to be effective absolutely needs to be accompanied by accommodating fiscal behavior (Favero &

[14] In 1984 and 1996 the inflation rate in Turkey was 140% and 130%.

[15] Fiscal policy is dominant when monetary policy accommodates fiscal decisions. In such situation monetary policy will consider fiscal policy as a constraint in the political decision process (Woodford 1994).

Giavazzi 2002). For developing countries this theory is an important matter directly related to their macroeconomic stability. Indeed governments as well as international development partners and academics are advocating for a deeper development of the financial sector for developing economies. The argument underlying such views is that external financing possibilities are getting scarcer for low (and middle) income countries therefore it becomes essential to be able to raise domestic finds. Any policy in favor of financial sector development should consider first the necessity for fiscal authorities to run prudential policies. In other words any pro-financial sector development policy might be destabilizing for poor countries if it ends up with government borrowing domestically at unreasonable level leading to higher level of inflation (that is harmful especially to the poorest agents).

1.4.2 Current account targeting

This theory is an extension of the twin deficit debate. A large section of academic studies have been interested in the relationship between external and budget deficits. Most empirical studies state the positive correlation and the comovement between external and budget deficits for developing countries (Chinn & Prasad 2003, Calderon & al. 2002). This positive comovement has been firstly explained by the relation between current account, private saving and budget balance[16]. Beyond this arithmetic relationship between external (current account) deficit and budget imbalance, shock associated with internal conditions (especially domestic resources net of public absorption) are the most important factor that explain the comovement between the two deficits (Chichi & Normandin 2008). Therefore if this relation becomes well established fiscal policy can be used by developing countries to sort out part of their economies' intertemporal budget constraint. In other words as developing countries mainly rely on external debt; they cannot afford to run indefinitely current account deficit since this debt needs to be repaid

[16] $CA = S - I \longrightarrow CA = S_G + S_p - I \longrightarrow CA = (T - G) + (S_p - I)$, with CA the current account balance, S_p private saving, S_G public saving, I investment, T government revenues, G public spending.

one day or another. Therefore in case current account threatens intertemporal solvency condition, the government is likely to use its budget (by increasing public savings) to adjust the external balance. Hence international debt relief initiatives and also concessionary should bear in mind that helping countries to overcome their balance of payments turmoil should not encourage fiscal authorities to run loose policies. Removing such constraint (external imbalance) for developing economies' government, should not encourage moral hazard behavior that could end up with (once again) inefficient fiscal policies. The only bottom line is that this issue has not been widely covered in the empirical literature, further investigations might allow seeing whether (some) developing countries really use budget variables to target current account balance. In order to capture the potential current account targeting and avoid bias in our estimations, the external sector (current account balance) will be considered in our empirical strategies all along this dissertation.

Recent international initiatives initiated by Bretton-Woods institutions have been focusing on ways and means to implement deep reforms in the budget area in low income countries.

1.4.3 The Medium Term Expenditure Framework: a new tool for better budget practices

Developing countries especially low incomes ones suffers from inefficient use of budgetary items. In the context where international development aid and proceeds from potential exportations are scarce and volatile, to achieve economic development and alleviate poverty public revenues and expenditures have to be efficient. In this context, several developing countries in partnership with multilateral development agencies (World Bank, IMF and, joined later by bilateral partners) have launched reforms on the public finance management (PFM). The PFM is a wide initiative (launched by World Bank) aimed at improving institutional arrangement and management practices that would create an environment favorable to better resource allocation, resource use and disciplined financial management. The departure point of this initiative has been the argument that

poor institutional arrangements are the main cause of undisciplined fiscal policy with adverse consequence on most vulnerable in the economy. Additional to that, recent analysis directly links ineffective budgeting systems and inappropriate, unsustainable policy choices and sector allocations on one hand and links also poor budgeting systems and weak policy implementation and inadequate service delivery (Le-Houerou & Taliercio 2002). In the PFM framework to be successful public finances reforms require to build up bridges between three levels of budgetary outcomes aggregate fiscal discipline, allocation of resources in accordance with strategic priorities and finally efficient and effective use of resources in the implementation of strategic priorities (World Bank 2002). Once the overall outcomes expected from these reforms, public expenditure reviews (PER) in developing countries ended up suggesting the adoption of medium-term expenditure frameworks (MTEF). The MTEF consists of a top-down resource envelope, a bottom-up estimation of the current and medium-term costs of existing policy and, ultimately, the matching of these costs with available resources in the context of the annual budget process (World Bank 1998). In other words under MTEF expenditures are solely driven by policy priorities. In the context of developing countries one first develops a macroeconomic and fiscal model that will provide with forecast of revenues and expenditures. Then development strategies and expenditure needs are identified for each (important) sector. This later document will be adopted by authorities as the final MTEF (Table1.1). Since early 1990s, MTEF has been rapidly adopted across the developing world (just between 1997 and 2001 more than 25 countries adopted the MTEF reform). Even if these figures might be interpreted as a success for PEM initiative, there has not been done yet an empirical assessment of the MTEF policies. Future studies could run macro-impact analysis and see whether these amendments have been successful in helping budgetary policies to targeting social and pro-poor expenditures.

The next section will present the rationale of this dissertation

Table 1.1 The Different Stages of a MTEF

STAGE	CHARACTERISTICS
I. Development of Macroeconomic/Fiscal Framework	• Macroeconomic model that projects revenues and expenditure in the medium term (multi-year)
II. Development of Sectoral Programs	• Agreement on sector objectives, outputs, and activities • Review and development of programs and sub-programs • Program cost estimation
III. Development of Sectoral Expenditure Frameworks	• Analysis of inter- and intra-sectoral trade-offs • Consensus-building on strategic resource allocation
IV. Definition of Sector Resource Allocations	• Setting medium term sector budget ceilings (cabinet approval)
V. Preparation of Sectoral Budgets	• Medium term sectoral programs based on budget ceilings
VI. Final Political Approval	• Presentation of budget estimates to cabinet and parliament for approval

Source: PEM Handbook (World Bank, 1998, pp. 47-51).

1.4.4 Contribution of this PhD dissertation and details on the content

The first chapter has been dedicated to first present key and commonly used fiscal concepts. These aggregates and concepts will be used all along the three remaining chapter to explain the phenomenon will be focusing on.

In a first stance this review indicated that developing countries especially low income ones have been running unsustainable fiscal policies. Debt levels had reached certain threshold that made compulsory adjustment and debt relief programs. Despite such indebtedness the success of fiscal policy in terms of poverty alleviation, output growth, employment and poverty reduction has been extremely modest. Given that traditional theories on fiscal policy failed to explain such situations, we have investigated the other arguments. "Structural Economic explanation" has argued that fiscal policy is neutral toward its objective due to the economic structures (large unregistered sector, weak tax revenues, scarcity of external resources etc.). On the other hand political economy theories argue that the strength of fiscal institutions and all political institutions in general has been the main cause of such underperformances of fiscal policies.

The common point between these different observations is that fiscal policy in developing countries is an essential component in the development process and ignoring or imposing unreasonable fiscal discipline could threatens its main objectives. The second and very obvious observance is that public finances are not "healthy" in these economies. However studies focusing on the empirical analysis of fiscal effects in developing countries have remained scarce. First of all studying fiscal policy effect for developing countries requires the use of relevant statistical tools and assumption since these economies are quite different from what can be seen in their developed counterparts. The literature survey has shown that several recesses up to now have not been investigated. This dissertation overarching aim will be, through three fields of analysis, provide a better understanding of fiscal policies effects in developing and show how the situation has changed over years.

Chapter 2: Fiscal Policy Shocks in Developing Countries: A panel SVAR approach

The literature on fiscal policies effects has mainly covered three aspects. The first aspect (see supra) focused on the taxation system and the inefficiencies related to tax revenues collection. Secondly institutional aspects characterizing budget policies, especially political budget cycle theories have been developed and empirically tested. Finally the third group of research wonders what would be the effects if developing countries decide to use fiscal policy in order to influence the real economy. The responses to such question have been inspirited by "traditional" theories (Keynesians, neo-classicals) and recent analysis has proven non-linear relationship between fiscal variables and agents' responses to fiscal stimulus (see supra). However it can reasonable happen that a (developing countries') government tries to run surprise policies in order to avoid adverse agents' anticipations and adaptation. Only limited empirical studies are related to this issue of the impact of non-anticipated fiscal measures. In additional, only little attention has been dedicated to developing economies (compare to OECD countries especially the US economy on which several articles focused on). Schclarek 2010 on a panel of 21 developing countries showed that spending shocks have Keynesian effect while tax shocks also have Keynesian impact on private consumption. Nevertheless these results raise important questions

regarding both the identification method and the underlying assumptions. The two steps estimation strategy, using IV-GMM (Generalized Method of Moments) does not guarantee the clear identification of exogenous and unanticipated changes in taxes and government spending. Also the definition of public revenues restricted to the (poor) tax revenues neglect essential aspect of budget characteristics in developing countries. The aim of this chapter will be, using original identification method, to answer whether government can reasonably recourse to "surprise policies" as an efficient tool to positively influence the real economy (and avoid adverse anticipations from private agents)?

Chapter3: Impact of Large Fiscal Imbalance in Advanced Countries on Developing Countries

For developing economies it has been largely demonstrated in several articles that they are closely related to business cycles in advanced economies. The change in exchange rate, output growth, interest rates in western countries and their influence on the global economy are the commonly effects studied. The consequences of developed countries' fiscal policies on their developing counterparts have received less attention. On the other hand since early 1990s, after the debt crisis, fast growing "new economies" start receiving important and capital flows. The several crises that emerging economies experienced during the last decade of the twentieth century demonstrated how these emerging markets were dependent toward external financing. During 2008 the new financial crisis whose origins lie in industrial countries affected the world economy. Among the solutions advocated by international organizations (IMF, G20, World Bank), there was the use of fiscal stimulus I order to mitigate the systemic risk related to the "too big to fail"[17]. Hence leading world economies (USA, European Union countries) engaged in important public spending in order to keep macroeconomic stability. The third chapter investigates whether it is reasonable to worry about a potential "world crowding out effect".

[17] In a famous article in the Financial Times Oct.2009 ("How the Fed Can Avoid the Next Bubble") Nouriel Roubini states that the stimulus packages might induce moral hazard and encourage risky strategies by large firms (e.g. General motors, Northern Rock) that believe that they are Too Big to Fail. Simply because the systemic risk that the collapse of such firms might cause is too important.

Advanced countries engaged into important public spending and increase their debt levels in the same vein might compete with developing economies in terms of access to capital flows. Another possible fact could be that emerging economies are entering into a new paradigm where they are getting disconnected from business cycles in the rich world.

Chapter 4: Fiscal Policy for Stabilization in Developing Countries

Despite the well known limitations of fiscal policies in developing countries does still public authorities tries to use it in order to stabilize macroeconomic fluctuations? Or rather governments simply run procyclical policies as the majority of empirical analyses argue. Indeed for these analysts, developing countries' fiscal authorities usually increase their delivery of public goods (and lower taxation) in good times and run the inverse policy in bad economic periods. This ends up worsening the severity of economic downturns. Some authors (e.g. Carmignani 2010) fiscal policy in developing countries has remained invariably procyclical since 1960s. Especially Carmignani 2010 who studied this on a panel of 37 African countries found that since 1960 all these governments keep running strong procyclical policies and *a fortiori* they did not learn from past situations and crises. However the recent IMF's Regional Economic Outlook report in April 2010 (dedicated to Sub-Saharan African economies) calls into question these results. It has been found during the 2010 global economic crisis that low income countries had adopted counter-cyclical fiscal policies. Therefore a doubt arises on the validity of Carmignani 2010 (and those sharing the same thought) findings. The last chapter overarching aim is to show, on a yearly basis, how fiscal policies have been used in developing economies (both Africans and Latin-Americans). Our analysis will also address the question that is usually neglected: are procyclical fiscal policies as bad as we might think?

Chapter 2: Fiscal Policy Shocks in Developing Countries: A Panel Structural VAR Approach

2.1 Introduction

The effects of fiscal policy is one of the most important and controversial issues in macroeconomics. Furthermore it would be interesting to study the outcome of a sudden and unexpected change in the fiscal policy for both developing and advanced economies. This chapter investigates the effects of government revenue and spending shocks on private consumption, output, external sector competitiveness and on trade balance. To study such effects one can use the narrative approach or the Vector Autoregressive method (VAR).

In the narrative approach, the studies on fiscal policy effects pose the hypothesis that a decision relating to public finance taken during period t-1 is not made public until period t. But this hypothesis is not strong enough since it is rare for a decision of this type to be taken without any debate taking place either through the parliament or through the media. Therefore economic agents anticipate the decision from the government and adapt their behaviour. So the anticipation and adaptation from economic agents introduce a bias in the identification of the effects of the fiscal change. According to Poterba (1988) (other authors such as Leeper (1989) present a similar argumentation) if the effectiveness of a policy is low, there is no way of verifying whether this is partially due to anticipation by economic agents. But another theory led by Blanchard & Perotti (2002) demonstrates that this judgment is not immutable and that by using VAR estimation it is possible to identify exogenous (thus, unanticipated) impacts on budgetary policy.

Sims (1980) first formulated the basis for the VAR modelling. The modelling came from the critiques against the theoretical restriction imposed on structural econometrics (especially multi-equations modelling). These critiques concern the simultaneous equations bias that resulted from the correlation of error terms with some explanatory variables and the causality problem between variables. Indeed the endo versus exogenous division of variables could lead to a bias as some variables could have reciprocal effects (Charemza & Deadman 1992). VAR modelling considers first that there is no endo-exogenous division of variables and second, the random errors are assumed to be

contemporaneously correlated but not autocorrelated. Since this system can be estimated consistently by ordinary least squares, VARs can be used for forecasting and analyzing causal relationship between variables. In order to make causal inference, some changes must be introduced in the VARs and this is called Structural Vector Autoregressions (SVARs). The main difference between SVARs and VARs is that the structural modelling requires very specific assumptions of what is exogenous or not (Stock & Watson 2007). And by putting some restrictions in the SVAR one can identify the impact of unanticipated fiscal or monetary policies. However VARs have received some strident criticisms for its atheoretical approach, due to the unrestricted nature of the lag structure that could be synonymous with unstructured[18] (Greene, 2008). The answer given by VAR users is that people should consider VAR models as reduced forms of a dynamic structural model (Diebold, 1998). Hence, in order to interpret VAR outcomes, one will need first to shed light on the theory underlying the model. This modelling method is usually used for monetary policy forecasting. But, according to Blanchard & Perotti (2002), the SVAR approach seems to be more suitable in fiscal policy analysis to the extent that there exist some genuine exogenous fiscal shocks (not due to output stabilization) and, decision and implementation lags in fiscal policy imply that there is little discretionary response (within a quarter) to unexpected movements in activity. It was in this context that some researchers began studying the impulse response to fiscal policy, but this was done mostly for industrialized countries.

The objective of this chapter is twofold. First, it fills this gap for developing countries by studying the outcome on economic activity from sudden change in the budget stance. In addition, developing countries are highly vulnerable and subject to several external and internal shocks. Furthermore public finances are one of the main channels through which these shocks impact on the real economy. Indeed, due to some fiscal weaknesses (this issue is covered in the first and fourth chapter) very often in low and middle income countries both public expenditures and revenues exacerbate cyclical downturns. The second objective is to investigate, in comparison to previous studies, whether developing countries follow the same behaviour in terms of fiscal shocks as their developed

[18] This would mean that there is no theoretical background under the choice of lags.

counterparts. We expect from the empirical results to answer the question whether developing countries can reverse the negative effects of shocks on the real economy.

I use SVAR with a panel of developing countries and the results show that a government spending shock has a positive effect on output, government revenue and private consumption. The impulse response of the external sector appears not to be statistically significant. Explanations of these results will be given taking into account the characteristics of developing countries.

This study is organized around five sections. The following section covers the related literature. Section three details the model specification while the fourth section presents the data and the forecasting results. The fifth section provides some discussion on the results. The last part concludes.

2.2 Fiscal policy effects in the literature

Literature on fiscal policy is divided in two areas. The first deals with fiscal policy effects without mention of the "unanticipated" aspects. The second set of studies deal with the latter, with recourse to different methods. This section will therefore initially cover the narrative approach of fiscal events before presenting studies and methods aimed at solving the identification problem.

2.2.1 Narrative approach

In their study, Ramey & Matthew (1998) first define the date at which agents learn about the upcoming increase in government expenditures. They identify three dates (1950: Q3; 1965: Q1 and 1980: Q1) associated to some important military spending[19] (and some authors add 2001:Q4 to the list of dates on which news about expansionary defence

[19] These dates correspond respectively to the Korean War, the Vietnam War and the Carter-Reagan defence program.

spending arrived after the September 11th attacks). They find that government spending starts rising only two or three quarters after the dates identified above (Burnside & al., 2004 reach the same conclusion) and the maximum value is reached after 6 quarters (Ramey & Matthew 1998). So, one cannot directly compare the SVAR method and the narrative approach as the latter only identifies anticipated changes in fiscal policy while SVAR shows government spending innovations that are orthogonal to past information. Using a simple model, which takes into account both unanticipated and anticipated innovation in government purchases, confirms the above results. The explanation given is that when agents learn about the increase in government spending in period zero, this creates a negative wealth effect (a decrease in private consumption). Firms will hence increase their prices to cover the "loss" in demand and obtain more profit. But in period two, when the measure is effective, firms on the domestic market expect higher demand and low markups. It is therefore optimal for them to disinvest in domestic market share whereas it is optimal for firms on the foreign market to invest on this market as markups are expected to increase in the future. In their paper, Ravn & al. (2007) reconcile the two methodologies and show that the only difference in the results between the SVAR method and the narrative approach is due to the behaviour of agents depending on when they know about the change in fiscal policy.

However studies on fiscal policy effects using SVAR (or even simple VAR) on panel data are quite rare certainly owing to the challenge associated with the identification strategy. Despite that, after presenting some analyses using time series data in the next sub-section the following one will review other studies on fiscal policy effects using panel data.

2.2.2 Literature on fiscal policy shocks

Blanchard & Perotti (2002) using a four-variable SVAR model on US quarterly data of government spending, taxes, output and its components find that positive government spending shocks have positive effects on output. The effects are completely different after a government revenue shock, as output and public spending decrease. A structural decomposition is implemented in order to identify unanticipated shocks. The

method of identification used relies on theory and institutional information. So, for instance, Blanchard & Perotti (2002) postulate that government spending responds with at least a one-quarter lag to structural innovations other than innovations to government spending itself. In other words, within a quarter only government spending can influence itself. After defining the reduced-form residuals as a linear combination of the structural innovations, they estimate all coefficients of those equations. For the remaining coefficients they could not estimate (the structural innovations), they therefore imposed some restrictions. The main limit of their study is that they do not give any explanation or channel of transmission to explain the impulse responses of American economy to a fiscal shock. Even if some other studies are applied to the USA, the comparison with Blanchard & Perotti (2002) will be confined to the "statistical" outcomes and to the identification method used. The other studies presented below try to offer a wider analysis framework.

2.2.2.1 Use of panel data

Ravn & al., (2007) use a panel SVAR of five variables for four advanced economies. Using the Blanchard & Perotti (2002) identification strategy, they find for four industrialized countries (United States, United Kingdom, Canada and Austria) that unanticipated government spending shocks lead to an increase in output and private consumption and a deterioration in the trade balance. Perotti (2004; 2007) finds the same results. Ravn & al., (2007) go a little bit deeper in comparison to some other studies (except Monacelli & Perotti, 2006) in the sense that they look at the effects of the increase in government purchases on the competitiveness of the country compared to its trade partners. The results show that a positive shock in government spending causes a quite persistent depreciation of the real exchange rate implying that the domestic prices become cheaper than the foreign prices. This could be a little bit astonishing, but the authors develop a model based on "deep habit" mechanism to give a theoretical explanation of their findings. Under deep habits, after a positive shock of government expenditures, the resulting increase in aggregate demand gives an incentive to firms to reduce their markups (as they can sell more and get more revenue). Then the domestic prices become inferior

in relation to foreign prices and the real exchange rate declines. As a consequence of the increase in labour demand the real wage rises. And here, one can deduct that there will be an equilibrium increase in private consumption as the substitution effect and the wealth effect will compensate. After an empirical test, the deep habit model confirms all the predictions and hence is a good theoretical framework of what is observed in developed countries when government spending increases. Therefore a key issue will be to see whether these deep habit model predictions are relevant for developing countries. Ravn & al., (2007) also reconcile the two ways of measuring the effects of fiscal policy, the SVAR approach and the narrative method pioneered by Ramey & Matthew (1998). The difference in results between the two methods solely depends on whether the change is anticipated or not. Studies relying on the SVAR method (most of them use the Blanchard & Perotti 2002 identification strategy) basically consider that the change in government expenditure is unanticipated whereas the narrative approach only considers anticipated changes, hence one should not expect the same result from the two analyses. The main finding from the narrative approach is that a government positive spending shock fails to cause an increase in private consumption.

2.2.2.2 Back to fiscal policy shocks

Mountford & Uhlig (2005) study the fiscal policy shocks on US quarterly data from 1955 to 2000. They use a different identification method from what is available in the literature on fiscal policy shocks. First they define fiscal policy shock as the linear combination of two basic shocks, the government revenue shock and the government spending shock[20]. Their identification methodology mainly tries to distinguish the genuine fiscal policy shocks from movement in fiscal variable in response to business cycles or monetary policy shocks by only using macroeconomic quarterly data (no assumptions on coefficient and on series). The first problem they address is the effects of the plausible lag

[20] Government spending shock is defined as a shock where government spending rises for a defined period following which a distinction between anticipated and unanticipated fiscal policy measures can be made.

between the announcement and the implementation of the policy (this can bias the result as agents adapt their economic choices before the effectiveness of the measure). The identification strategy therefore directly identifies a shock for which there is a lag between the announcement and the implementation[21]. Second, to make sure that movement in fiscal variables are not due to other factors than fiscal policy shock; this article also defines business cycle and monetary policy shocks. Then genuine fiscal policy shocks must be orthogonal to business cycle shocks and to monetary shocks (monetary policy and business are also orthogonal). Practically, Mountford & Uhlig (2005) consider that when the government revenue (or government spending) moves in the same direction as output, the economy experiences a business cycle shock instead of a fiscal policy shock. The monetary policy shocks move the interest rate up and reserves and prices down. After those assumptions one can easily identify the real cause of fiscal variables movement. They find that unanticipated government revenue shock has a positive effect on output, consumption and national investment increase while when the same measure is anticipated we obtain inverse effects (GDP and consumption decline). Unanticipated government spending shock has a positive effect on output, a weak effect on consumption whereas investments decline in response. When the increase in government expenses is anticipated, we have positive impact on output and consumption. This study is interesting for two reasons. It can be a sort of benchmark of results from other papers and it raises some criticisms related to the method used. First, one observes that Mountford & Uhlig (2005) retrieve the main outcomes as in Blanchard & Perotti (2002). The effect on private consumption of a spending shock is positive in both studies but the impact is greater in Blanchard & Perotti (2002) which is in accordance with the Keynesian model (Galí & al. 2004 also reach the same conclusion on consumption as Blanchard). On the whole, Mountford & Uhlig (2005) find that the impact of fiscal changes on consumption is in general insignificant. Now, if we consider investment the effects are the same as it declines after a tax increase or a spending increase.

[21] For instance, if a government spending shock only rises four quarters after its announcement, then this shock is defined as a shock where government expenses rise in the fourth quarter following the announce (Mountford & Uhlig, 2005 and Beaudry & Portier, 2003).

When we compare Mountford & Uhlig (2005) to other studies (like Ramey & Matthew 1998 and Edelberg & al. 1999) pertaining to the impact of anticipated fiscal measures, the findings remain the same as changes occur with regard to private consumption when government spending increases. The only difference is in investments as our benchmark studies find that a public spending increase has an initial and transitory positive effect on investment. All the papers in consideration find that residential investments fall after a government spending shock and non-residential investment is crowded out.

This paper raises some questions. Even when one uses other identification methods, the Blanchard & Perotti results are confirmed thus showing that their approach is appropriate. With regard to the Mountford & Uhlig (2005) identification method, authors warn readers from the onset that they use "strong assumptions" in their identification strategy. Their estimations allow them to consider the business cycle shock to be causally prior to the fiscal policy shock (it is fully plausible that an increase in tax receipt causes a business cycle upturn). Some similarities therefore exist between this study and the related literature. The strength of the Blanchard SVAR identification strategy is that the SVAR matrix solves the problem of causality and anteriority between the variables of interest.

Fatás & Mihov (2001) use a VAR estimation for the purpose of comparison between the real business cycle (RBD) model predictions and the main findings in the literature. The identification strategy used is almost the same as Blanchard & Perotti 1999. Indeed with a "simple" VAR[22], they assume that any government spending components react automatically to changes in economic conditions[23]. Fatás & Mihov (2001) adopt the same procedure as in semi structural VARs as they do not make restrictions in the relationship between the macroeconomic variables and the government tax revenue. They find that an increase in government spending has a positive and persistent impact on private consumption (and on all its components: durable goods, non-durable and services) and

[22] By "simple" VAR, I mean a VAR with no structural restriction.

[23] Government spending variables do not move in reaction to shocks in the economy (Fatás, A., Mihov, I., 2001). The authors recognize that the assumption arguing that decisions on tax are taken only after spending is determined is a plausible idea but unfortunately not testable. This, in our point of view, shows how Blanchard & Perotti's (1999) identification strategy to shock can be plausible, useful and testable.

this rise explains the positive reaction of output. In their results, investment does increase after six quarters and returns to trend within the three years following the shock. Nonetheless, , Fatás & Mihov (2001) find that following the spending shock, wages and employment increase; this result is in accordance with Rotemberg & Woodford (1992). Their robustness check using forecast policy variable confirms the earlier findings. The robustness analysis confirms the assumption that no other macroeconomic variable affects the public expenses (one can say that what is identified in this paper is really unanticipated changes in government spending). Comparing their results to the RBS predictions they find both similarities and differences. Thus the empirical model finds (VAR specification) that increase in government spending is expansionary, which is not consistent with the benchmark model. This is due to the simple reason that the RBC model argues that government spending shock is expansionary (but) and the multiplier associated can be greater than one. Second, in the benchmark model, private consumption fails to increase[24] after a government spending shock and only the increase in investment drives the expansionary effect. However in the VAR specification, one found that a fiscal policy shock leads to an increase of private consumption hence an increase in output. For the authors, those differences show the limits of the RBC model in explaining the most plausible effects of a fiscal policy shock. And another failure of the RBC model is the negative correlation that it predicts between consumption and employment. Indeed in the VAR specification, consumption and employment move in the same direction after a public spending increase. This is due, according to Fatás & Mihov (2001), to the fact that there has to be a large change in real wages to compensate for the fact that if consumption and leisure are normal goods they will tend to move in the same direction in response to changes in a household's wealth.

So as we can observe, the VAR specification is a good specification as it clearly shows the different impacts of a fiscal policy shock on the components of the economy. In the next section one will look more deeply at the SVAR specification using panel data and how this can help to explain the effects of fiscal policy shocks in developing countries.

[24] This is due to the negative wealth effects induced by the surplus of public spending.

Studies on fiscal policy shocks in developing countries are relatively scarce. Papers focusing on fiscal policy in developing countries usually follow Giavazzi & Pagano (1990). These studies are interesting with regard to the effects of fiscal policy based on the initial situation of the fiscal balance, the initial debt level and the composition of the fiscal measure considered. In that context, a recent study of Schclarek (2007) on developing countries shows that government spending and government revenue (taxes) has Keynesian effects on private consumption and its outcome do not depend on the initial situation of the public finance. This literature cannot be used as a benchmark for the results in this paper, as Schclarek (2007) (and similar studies) rather than identifying shock (i.e. unexpected change in fiscal policy), identify fiscal effects once private agents get and analyse all information available to them. The main issue in this paper is to ascertain whether an unanticipated fiscal measure in developing countries has the same effects as in the developed world. For the developing world, I expect government spending to work through a channel different from the one proposed by the deep habit model. Given that competition between firms is not as high as in advanced countries, firms can leave their markups unchanged and the aggregate demand will even increase. In the discussion section some alternative explanations will be provided for developing countries.

2.3 The SVAR specification in fiscal policy literature

In this section, I present the SVAR analysis for studies on fiscal policy (same specification for monetary policy) and later the model used.

The VAR analysis has been used more often in research on monetary policies. But as said above the VAR analysis can be quite suitable for fiscal policy analysis for three main reasons according to Mountford & Uhlig (2005). First the VAR analysis can help to model the effects of announcements, second, one can distinguish the changes in fiscal variables caused by fiscal policy shocks and those caused by other shocks (business cycle and monetary policy). Finally any additional information (such as the timing of the policy change) is necessary to perform the simulations.

2.3.1 Fiscal Shocks: unanticipated discretionary measures

The concept of shocks needs to be clearly defined and understood. Even if this issue was briefly addressed earlier in this chapter, one can wonder what is meant exactly by fiscal shocks. Shocks are considered as discretionary (unanticipated) fiscal measures different from stochastic automatic feedback effects. In other worlds the change is due to a voluntary action from fiscal authorities while the other parameters in the economy (for instance output growth) do not exert any influence on that. The inverse of such concept of shock could be for instance fiscal automatic stabilizers which are independent from policy makers' actions and solely depend on economic activity level.

Therefore one needs to implement and use an approach that permits the distinction between stochastic automatic responses and real discretionary policies on one hand and an estimation of the direct impact of shocks so identified.

Hence, obtaining a clear identification of independent policy shocks depends on an appropriate specification of the VAR. The SVAR specification is presented hereafter, and identification strategies will be detailed later.

2.3.2 The structural VAR specification with panel data

In econometrics the most common situation consists of having an equation where there is a dependent variable and some other explanatory variables. Nevertheless, one can have simultaneity between variables when explanatory variables are also determined by the dependent variables they aim at explaining. According to Sims (1980) when there is simultaneity among a number of variables, then these variables should be treated in the same way (Asteriou & Hall, 2007). So, all variables should be considered as endogenous. Following which, VAR can allow us to perform tests in order to identify the direction of

causality among variables[25]. After Sims (1980), VARs have been mostly used to identify the transmission mechanism of monetary policies.

We present below a model of SVAR applied to panel data. The main advantages of this procedure are discussed in the following section.

First we show that a basic structural VAR with time series data can be written as[26]:

$$(1)\quad \underset{m\times m}{[A]}\underset{m\times 1}{[Y]} = \underset{m\times m}{[B]}[Y_{t-1}] + \underset{m\times k}{C}\,\underset{k\times 1}{X_t} + \underset{m\times 1}{U_t}$$

(1) Is a multivariate structural autoregression model. With X_t a k exogenous vector autoregression. Y_{t-1} are the lag values of the "dependent" variable. U_t a m structural (exogenous) shocks. So with (1) we have m different variables[27].

Once we want to apply to this model panel data, some changes should be made to take into account the multidimensional nature of our series. The model can be written as follows:

$$(2)\quad \underset{m\times m}{[A]}\underset{m\times 1}{[Y_{it}]} = \underset{m\times m}{[B]}[Y_{it-1}] + \underset{m\times k}{C}\,\underset{k\times 1}{X_{it}} + \underset{m\times k}{\Psi}\,\underset{k\times 1}{f_i} + \underset{m\times 1}{U_{it}}$$

Index **i** refers to the cross sectional observations and t the time period. Here in equation (2), f_i is the unobserved individual effect. This specification implies that the error term U_{it} satisfies the orthogonality condition which allows us to consider lagged values of Y as instrumental variables (Holtz-Eakin & al. 1988).

[25] To determine the direction of causality, one can use the Granger causality test or the Sims causality test. We will not discuss this point in detail as it is not our main field of interest in this paper.

[26] We follow the analysis of Holtz-Eakin & al., 1988.

[27] For instance, if $m = 2$ we have two different equations.

The main advantage of introducing the individual effect is that it allows us to consider that the time series relationship between the dependent variables, its lag values and the exogenous variables is not identical (Holtz-Eakin & al. 1988). In equation (2) we also allow the variance of U (the structural innovation) to differ with the cross-section unit (that's why U is indexed with i).

According to Holtz-Eakin & al. (1988), using SVARs with panel data has the advantage of allowing us to relax the assumption of time stationarity, as the presence of a large number of cross-sectional units makes it possible for lag coefficient to vary over time.

In this model, though we want to estimate the coefficients A, $\mathbf{B}$ and U, the issue is that one can only observe a statistical VAR (reduced-form VAR):

$$(3)\quad \boldsymbol{Y_{it} = VY_{it-1} + WX_{it} + e_{it}}$$

With e_{it} is a vector of statistical innovations (a reduced-form residual and not a structural shock) which are a combination of the structural innovations (U_{it}). The main question is how to recover the "missing" coefficient from V and e. To do so, one can write:

$$\begin{aligned}
&AY_{it} = BY_{it-1} + CX_{it} + U_{it} \\
&\Rightarrow Y_{it} = A^{-1}BY_{it-1} + A^{-1}CX_{it} + A^{-1}U_{it} \\
&\Rightarrow V = A^{-1}B \\
&e_{it} = A^{-1}U_t
\end{aligned}$$

The variance of e_{it} is: $\mathbf{var}(e_{it}) = \left(A^{-1}\right)^2 \mathbf{var}(U_{it})$.

The assumption that the structural innovations are uncorrelated across time and between individuals means that the matrix of the variance of those structural shocks is a diagonal.

$$\mathbf{var}(U_{it}) = \begin{pmatrix} 1 & \dots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & 1 \end{pmatrix} = I$$

The orthogonality condition presented above also holds for the structural innovation on the panel model[28].

And the variance of the reduced-form residual e_{it} is a symmetric matrix:

$$\text{var}(e_{it}) = \begin{pmatrix} \ddots & \cdots & a_{ij} \\ \vdots & \ddots & \vdots \\ a_{ji} & \cdots & \ddots \end{pmatrix}$$

$\text{var}(e_{it})$ is a $m \times m$ matrix; with $a_{ij} = a_{ji}$

Then we have: $A = \sqrt{\left[\text{var}(e_{it})\right]^{-1}}$

So from this matrix one can recover $m + \frac{(m-1)^2}{2}$ coefficients. Whereas we need to estimate m^2 coefficients of A (to retrieve A) but we only have $m + \frac{(m-1)^2}{2}$ of estimates available from $\text{var}(e_{it})$.

To solve this problem we need some restriction on matrix A as Blanchard & Perotti (2002), or use the Cholesky decomposition.

In this study we will use both methods to estimate the impulse responses from our SVAR in order to have a situation of reference and benchmark estimation.

2.3.3 Identification methods: Blanchard & Perotti and Cholesky ordering

Before presenting our data and the sample used in this paper, explanations will be given on the two different identification methods: the Blanchard & Perotti technique and the Cholesky decomposition method.

[28] This condition is that : $\text{E}\left[Y_{it}U_{it}\right] = \text{E}\left[X_{it}U_{it}\right] = 0$

2.3.3.1 Blanchard & Perotti identification method:

First Blanchard & Perotti (2002) write down the reduced form residuals (of the three different VARs they are using) as a linear combination of the underlying structural innovation. Then, they rely on institutional information (and on other studies) to estimate the impact of unexpected movements of GDP on taxes and government spending. To do this they construct the elasticities to output of public spending and government revenue. The estimation of those coefficients will allow them to construct the cyclically adjusted reduced form of their variables of interest (taxes and spending). As the cyclically adjusted reduced form of tax and spending are not correlated to the structural shocks we can use them as instruments to estimate the impact of unexpected movement of taxes and spending on output. The remaining problem to solve here will be the estimation of the impact of the unexpected changes of taxes (spending) on spending (government revenue). To solve the problem they do not consider the two decisions at the same time. For instance, the decision of increasing the expenses can be considered as coming first and one is able to estimate the impact of unexpected change of spending on taxes[29].

In more detail, by using matrices the SVAR specification is as follow:

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & \alpha_{24} \\ 0 & 0 & 1 & \alpha_{34} \\ 0 & \alpha_{42} & \alpha_{43} & 1 \end{bmatrix} \begin{bmatrix} u_t^{govspen} \\ u_t^{govreve} \\ u_t^{priconso} \\ u_t^{y} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \beta_{21} & 1 & \beta_{23} & 0 \\ \beta_{31} & \beta_{32} & 1 & 0 \\ \beta_{41} & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} v_t^{govspen} \\ v_t^{govreve} \\ v_t^{priconso} \\ v_t^{y} \end{bmatrix} \quad (4)$$

Here I will use only some variables to illustrate the Blanchard & Perotti identification method. The full set of variables is presented in the empirical section of the chapter. The vector of variables $X_t = [\text{govspen}_t, \text{govreve}_t, \text{priconso}_t, y_t]$ represents

[29] However as authors said, we believe that the ordering does not make big differences in the results as there is little correlation between the cyclically adjusted reduced form of taxes and spending.

government spending, government revenues, private consumption and GDP. v_t is the matrix of structural shocks, and the right hand side coefficients capture the automatic stabilizers effects (Kumah & Matovu, 2007) and as said earlier this matrix is uncorrelated with a diagonal contemporaneous covariance matrix (Ω), u_t is a matrix of innovations. The coefficients of the left-hand side (the u_t) capture the stochastic effects (automatic stabilizers) and the right-hand side coefficients (the v_t) represent the effects of discretionary policies (policy shocks).

Therefore the issue here will consist of identifying discretionary shocks (from automatic responses of fiscal variables to change in economic activity). For Blanchard & Perotti (Kumah & Matovu, 2007 used the same approach), using quarterly data ensures that there is no reaction of fiscal variables due to an automatic stabilizers effect. Therefore within a quarter a change in any fiscal variable is due to a voluntary action from policy makers. In addition, the structure of the model allows us to introduce clear constraints that refrain other variables (in case they could influence fiscal aggregates within a quarter) from influencing the public finances stance.

$$\begin{bmatrix} u_t^{govspen} \\ u_t^{govreve} \\ u_t^{priconso} \\ u_t^{y} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ \beta_{31} & \beta_{32} & 1 & 0 \\ \beta_{41} & \beta_{42} & 0 & 1 \end{bmatrix} \begin{bmatrix} v_t^{govspen} \\ v_t^{govreve} \\ v_t^{priconso} \\ v_t^{y} \end{bmatrix} \quad (5)$$

The final form of the system is presented in equation (5). Government spending and public revenue shocks are strictly exogenous[30]. Coefficients β_{31} and β_{32} show the response of price level to government spending shocks and public revenue shocks. While β_{42} and β_{41} represent the effects on output of shocks on fiscal variables.

[30] Here it is possible to consider that government revenues can respond to discretionary change in public expenditure. In such situations, the coefficient (second raw, fourth column) will be different from zero.

2.3.3.2 The Cholesky ordering

Cholesky ordering is a statistical decomposition of symmetric positive-definite matrix. This procedure allows us to orthogonalise the residuals using the inverse of the Cholesky factor of the residual covariance matrix. This procedure is simple as one does not need to write a matrix and impose restrictions (Younus, 2005). But it is quite risky when the ordering of the variables in the VAR is vital as it attributes all of the effects of any common component to the variable that comes first in the VAR system. Once we change the ordering we obtain different results.

In the estimations, I will use both methods and see which one gives the most interesting empirical explanations of the phenomenon studied in this chapter.

2.4 The data and estimations

This section gives a brief presentation of the data, and presents the empirical results. The list of countries is shown in appendix.

We use quarterly panel data in our estimations. The use of quarterly data is mainly justified by our objective to identify the outcomes of fiscal policy shocks. If annual instead of quarterly data was used, there might be loss of information. This is simply due to the fact that shocks happening in the first months of the year can be completely smoothed at the end of the year. Besides, in a quarter, a change in fiscal variables is only due to fiscal policy shocks and not the economic activity. In other words it takes more than one quarter for fiscal variables to react to variation in the economic activity (Blanchard & Perotti, 2002). This assumption justifies basically the restriction I make on the structural residuals.

The long period of observation in our data (1960 to early 2002) gives us the opportunity to take into account many changes in fiscal policy that have taken place in developing countries (debt crisis for some, raw materials shocks, etc.). Moreover this deep temporal dimension is necessary to obtain enough instrumental variables to identify the system as

this is necessary to estimate (according to the number of VARs in our model) an important number of coefficients.

2.4.1 The data and summary statistics

One uses the International Financial Statistics (IFS) data base of the International Monetary Fund (IMF). As said above the data covers the period from 1960 to 2002. All variables are in percent of GDP (consumer price index used as deflator) and put in log form (except the real effective exchange rate).

The main series are general government spending and revenues, private consumption, trade account balance, and real GDP per capita, all from the IFS data base. In what follows, an increase in the real effective exchange rate (REER) reflects an appreciation and therefore a loss of competitiveness. A full definition of the variables is presented in annex.

Like many others, this study faces the problem of availability of data especially with regard to quarterly data. Despite this issue, the frequency and the length of the data end up being an advantage since it gives enough observation and variability allowing us to run the estimations.

I use data from a sample of 34 developing countries. Table 2.1 gives some summary statistics.

Table 2.1: Summary Statistics

	PRICE	PRIVATE_CONS	REER	TRADE_BALANCE	OUTPUT	G_REVE	G_SPEND
Mean	38.91108	3.886120	5233.505	-0.263240	4.575331	4.189924	4.476237
Median	27.50500	4.046847	101.7600	-0.319265	4.911819	3.274677	3.375112
Maximum	153.7800	10.55872	7116400.	4.687524	11.00112	12.69606	12.99033
Minimum	0.000000	-1.474936	12.46000	-6.990538	-1.200986	-5.418711	-3.874312
Std. Dev.	37.02202	3.141912	147623.6	1.860719	3.231279	2.748820	2.896620
Sum	192687.7	1876.996	17286267	-85.28965	2337.994	6481.813	7242.552
Observations	4952	483	3303	324	511	1547	1618

2.4.2 The empirical results

The main concern while running the impulse responses on panel data was a possible correlation between residuals across countries. But Ravn & al., (2006) show that this problem is very negligible and results do not change if one applies GLS estimation[31].

Formally, following Blanchard & Perotti's identification method, I consider that within a quarter, government spending (or government revenue) only respond to innovations to government spending. Then I just impose the first row of matrix A to be equal to 1 for its first element and zero elsewhere. After that, I present in this section the impact of a fiscal policy shock on output, private consumption, real effective exchange rate and trade balance. To avoid having an important number of coefficients to estimate and therefore the loss of a degree of freedom, I do not introduce all variables of interest in the same VAR. Only a maximum of five variables are therefore considered in one SVAR specification to sort out this problem.

I first present the results from a structural decomposition using the Blanchard & Perotti (2002) method and use the Cholesky decomposition as a benchmark to our findings.

2.4.2.1 Responses to a government spending shock

Statistically significant estimations are those for which the two standard error bands do not include the zero line. In other words as soon as the zero line is between the standards error bands this would mean that the impulse response is not statistically significant, and hence the variable considered is not responding to the shock[32]. Another particular aspect of SVAR is that since it is a forecasting tool showing outcomes after a sudden change in policy, then there is not a single coefficient estimated. The model only

[31] Generalized Least Squares (used when OLS is inconsistent) is an estimation method used when there is some heteroscedasticity or a correlation between the observations.

[32] Mountford & Uhlig, (2005) used the same method to interpret their results.

estimates the coefficients inside the matrix which will be used to determine impulse responses.

I consider that the government purchases increase suddenly and this situation is unexpected. Figure 2.1 displays the impact from a structural decomposition.

As we see, the shock on government spending itself is persistent. The impact on GDP is quasi simultaneous, positive and lasts relatively long. The private agents, unexpecting the fiscal policy increase their consumption probably due to a wealth effect. The effect on trade balance is negative but not very significant. Obviously, this shows us that after the shock, the country seems to increase its importation and that this situation is transitory as after five to seven quarters the effects of the fiscal policy on the trade balance disappear. These results, which will later be compared to other findings, remain strong even when the Cholesky decomposition is used (Figure 2.2).

In Figure A.2.1 (Appendix1), only the real effective exchange rate is added and the trade balance taken out as we avoid an important loss in the degree of freedom. The same effects are found with slight differences. The government spending shock seems to be persistent. For output and private consumption, the response comes with a small lag of less than six month but it remains that the effect on those variables is positive and persistent. Unfortunately, the real effective exchange rate (REER) does not respond significantly to a spending shock even when one uses a different identification method like the Cholesky decomposition (Figure A.2.2, Appendix1).

2.4.2.2 Impulse response to a government revenue shock

Impulse responses to a government revenue shock are presented in Figures 2.3 & 2.4. The sudden increase of government revenue is quite persistent and also has an impact on government purchases that increase at the same time. It can be surprising to see that a public revenue shock has a positive impact on output and on household consumption. These results are at odds with Blanchard & Perotti (2002) results for the US economy. Some ideas will be brought to try to explain these "uncommon" results for developing

countries. When one has a look at the external sector, we first see that REER do not respond to a revenue shock (Figures A.2.3 & A.2.4, Appendix2). The trade balance deteriorates but the shock seems to be transitory. Most of our results for this sample of developing countries are quite original. But as said above one cannot perform a comparison as no other study on panel SVAR is applied to developing countries to identify fiscal shocks. Nevertheless in the coming section, and relying on what is known of the economic environment of developing countries, some interpretations will be given.

Figure 2.1: Impulse response from government spending shock

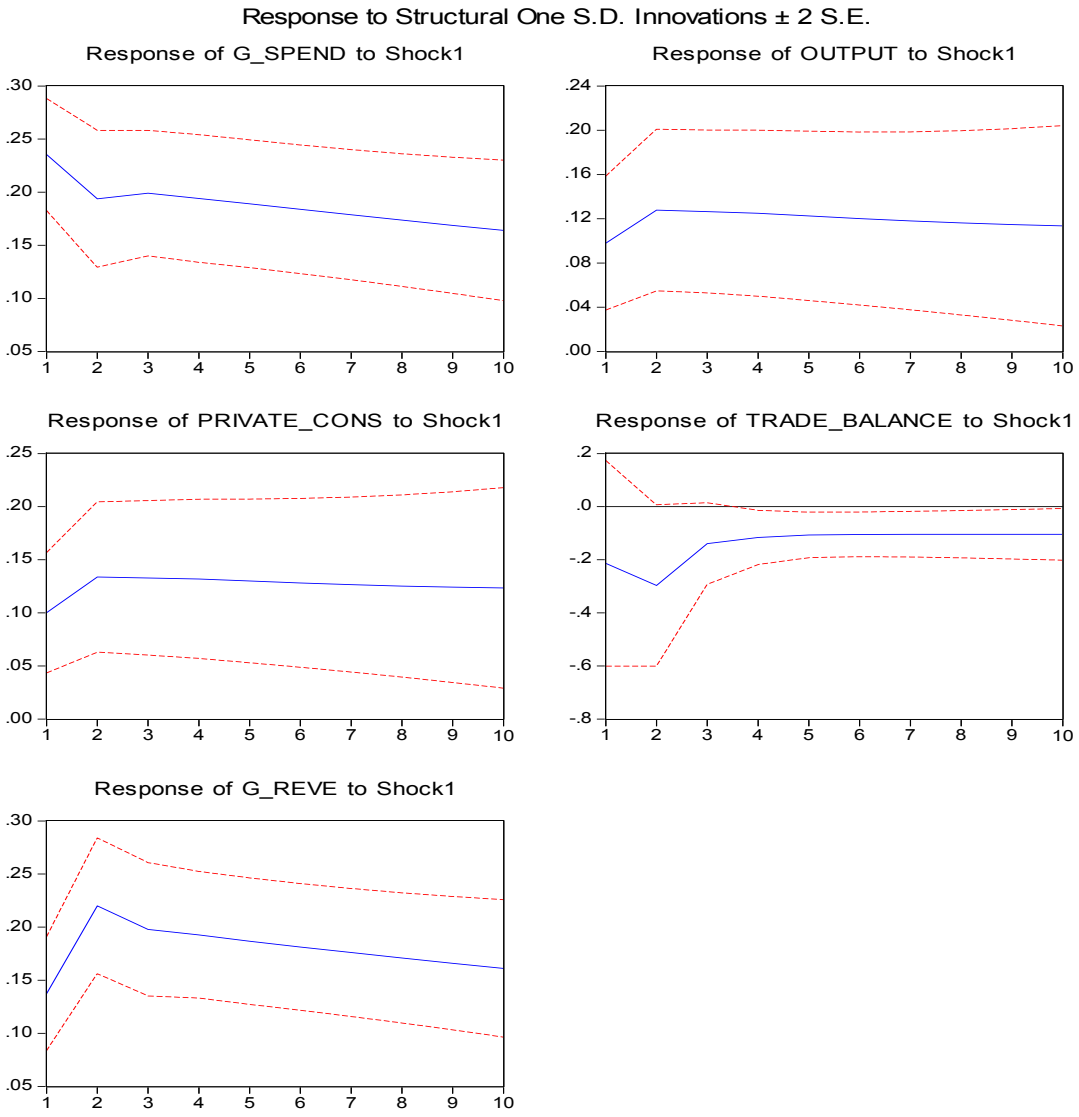


Figure 2.2: Impulse responses from government spending shock

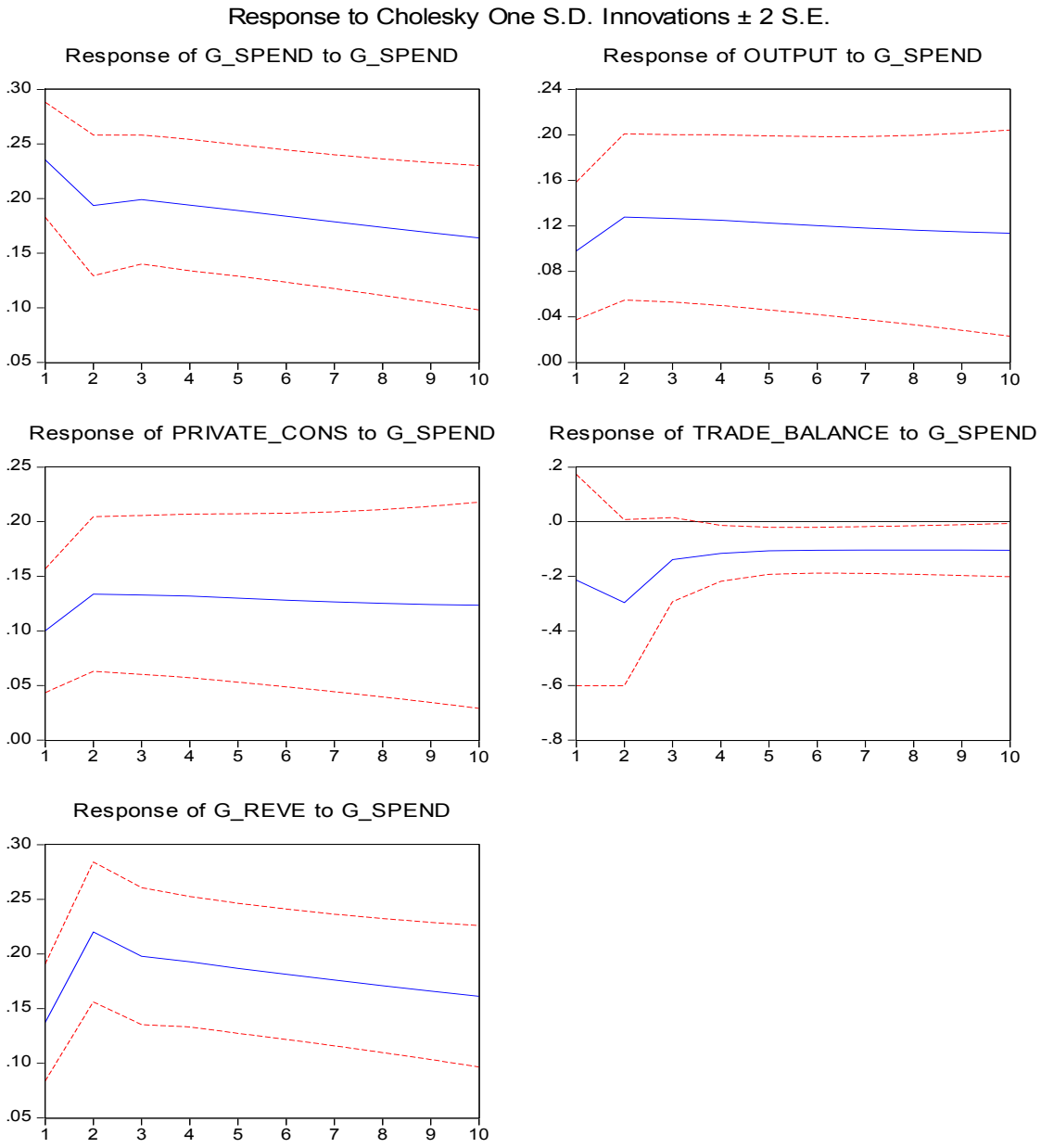


Figure 2.3: Impulse Response to Government revenue shock

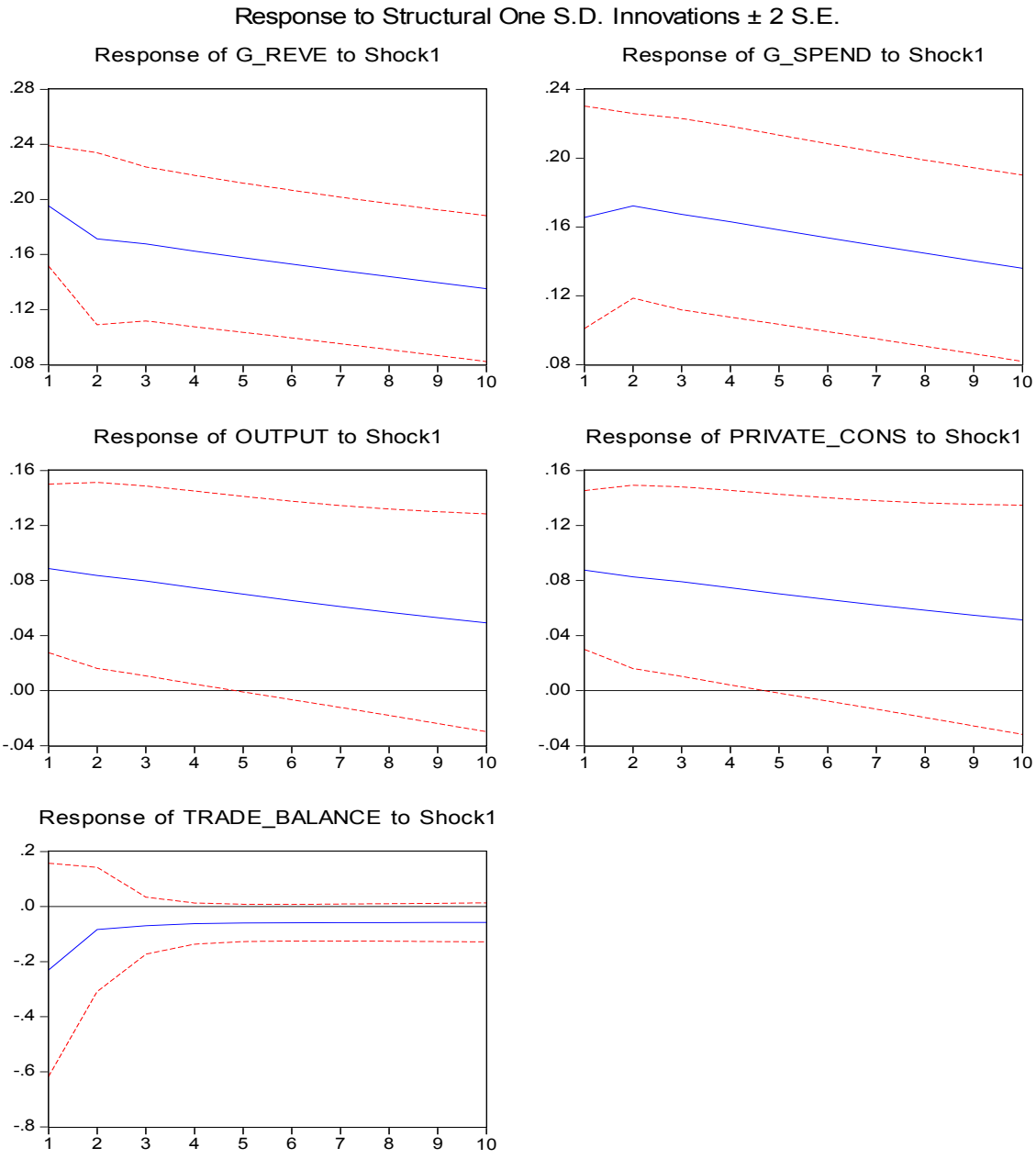
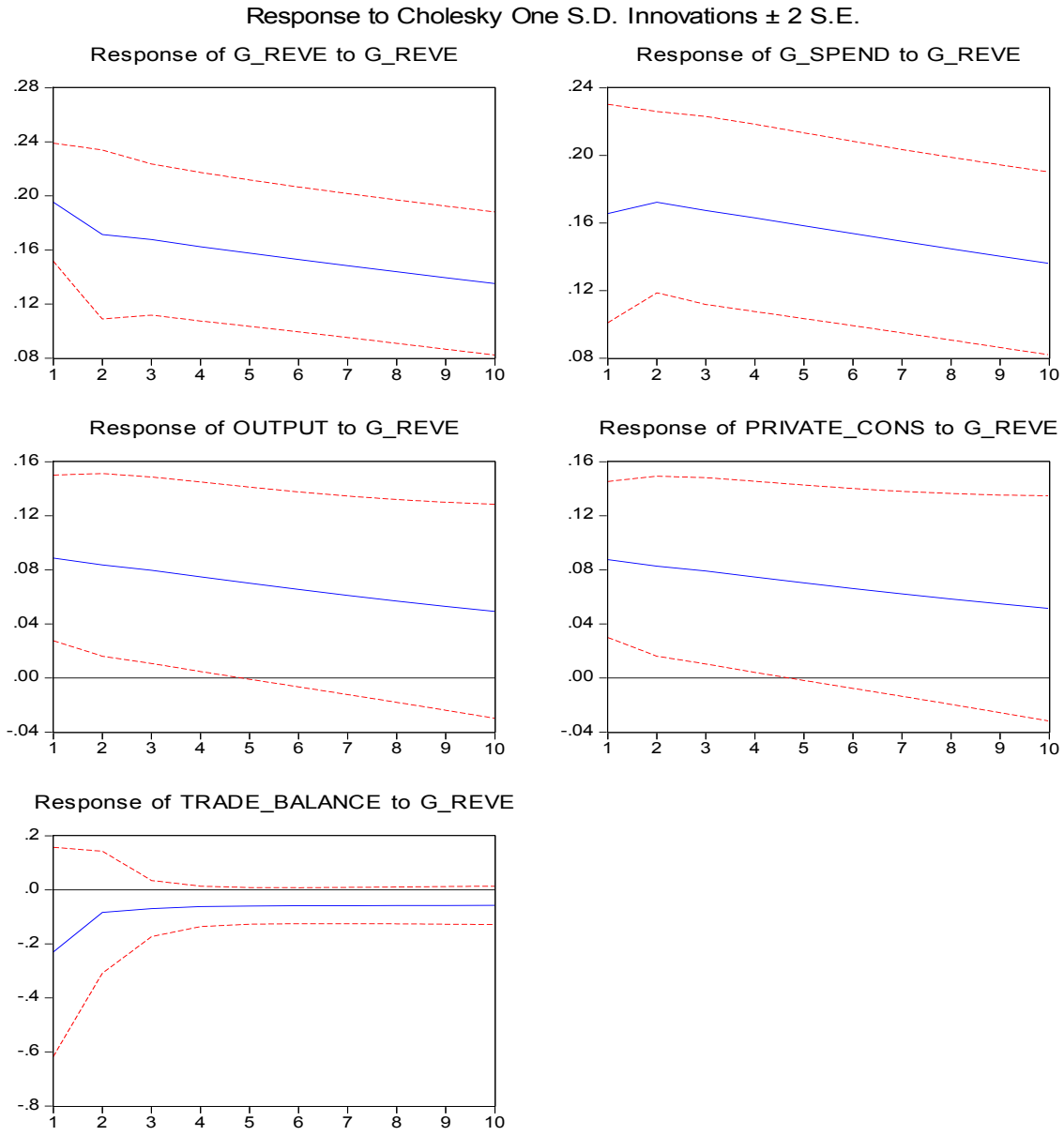


Figure 2.4: Impulse Response to Government revenue shock



2.4.3 The Stationarity Issue

Given the length of the period of observation (more than 150 quarters) some series can be deemed as non-stationary. However another view states that this issue is not a major concern in panel SVARs and (many) other studies ignore the possible existence of a unit root. For instance, Ravn & al. 2007, Montford & Uhlig 2005 consider that their quarterly series has no unit root during the period 1955-2000. This assumption (not considering the existence of unit root in such data) for series like price, trade balance and output seems a bit hard to defend. In what follows, one tries to address this issue by running several panel unit root tests.

Apart from the usual panel unit root tests (details on such tests are provided later in this paragraph), VEC models (Vector Error Correction Model) can be used to sort out the non-stationarity. The VEC model is a restricted VAR designed for use with non-stationary series that are known to be cointegrated. Indeed, once the econometrical tests show that variables are non-stationary and if there exists some cointegration, then VEC procedure becomes robust. Despite such advantages the VEC model presents some limits. Indeed with VEC procedure, structural shocks with transitory effects do not have contemporaneous effect on weak exogenous variables (Fisher & Huh, 1999). In addition, VECs can only be used with unrestricted VARs, and are therefore not consistent with the main purpose of this chapter. Given these important limits, the VEC model will not be used.

Hence our method will consist of testing for the stationarity of each variable and once a variable has a unit root the first difference will be used in the estimations. The results indicate that (see Appendix5) private consumption, government spending, price level and output growth are non-stationary, while other variables (government revenue, trade balance and exchange rate seem more stationary). The next step is to use first differences instead of the simple log of variables. Then the same shocks are introduced with new variables, as previously.

Once first differences are considered, the immediate effect after the shock is roughly identical to previous results. Appendix 6 FigureA.2.5 shows that a spending shock does not affect the external sector (trade balance)[33]. As previously, public spending discretionary increase receives a positive impulse response from private consumption, output and government revenue. However a major change is noticed on the durability of the responses of the variables of interest. Indeed, discretionary measures on public spending disappear after only 2 quarters (while in the previous paragraph the change was quasi-permanent). Impulse responses from output and private consumption also disappear after 3 to 4 quarters. The fact that the response to shocks disappears more rapidly than previously (situation where series were non-stationary) demonstrates that the series was highly non-stationary and this affected the results. Impulse responses after a government revenue shock are presented in Appendix6 FigureA.2.7 & FigureA.2.8. Here again no major change in the results except for the durability of the impact of shocks.

The last puzzle remains the response of government revenues to public expenditures shock that remain unchanged for a relative long period (more than 9 quarters). Also usually discretionary changes in government revenue last quite longer. For developing countries, since automatic stabilizers are weak (Carmignani, 2010) due to small government size, public revenues do not readapt quickly to change in economic activity[34]. Indeed this denotes rigidity, especially on the revenue side since policy makers are not able to change tax rates after the period of resilience of real economy following a shock.

2.5 Discussion and Policy Recommendations

The impulse responses to a government spending shock in developing countries are similar to those found in advanced economies. Indeed the main studies find a positive effect of an unexpected increase in spending on output and private consumption

[33] The result is similar when REER is considered instead of trade balance.

[34] In most African countries, the substantial ineffectiveness of formal social safety networks implies that automatic stabilizers are weak (Carmignani, 2010).

(Blanchard & Perotti 2002; Giordano & al. 2007 and Ravn & al., 2007). According to Giordano & al. (2007) the positive impact on government revenue of a spending shock is due to the increase in wages that enhances tax revenue. This result can hold for developing countries once one knows that the public sector is a major actor (in many instances, government is the first employer) in these economies. Nevertheless the effect on output for developing countries works differently from what was found previously in the literature. That is in some cases when the data provides the opportunity to see which part of public spending, after a rise in government expenditures. This is simply due to the fact that when government purchases increase the public revenue remains the same (or decreases) and this facilitates the rise of economic activity. For developing countries (even if we do not test this hypothesis due to the scarcity of quarterly data), when the government suddenly increases its expenses, public revenue and output increase. This is not a surprising result as government is the major actor in developing economies and most of investments are public. Therefore it is understandable that the GDP increases.

Concerning the external sector, our findings are in line with the results in the literature. Funke & Nickel (2006) find that an increase in government expenditures has a positive impact on both import of goods and services. This leads to a deterioration of the trade account. The same mechanism works in our analysis (even if our results are not highly significant) in the sense that consumption needs for the public sector after a shock are so important that imports should increase. However we still don't have the exact impact of government spending shock on the competitiveness of developing countries. This will be understood after I make clear the impact of a shock on trade balance. The first explanation could be the quality of our data when we see how scarce quarterly data can be. Another explanation for this outcome can be that the developing countries import most of their consumption during shocks or in normal times. Therefore the situation does not change that much after a shock in the sense that the country is not shifting from a state of net exporter to a net importer (only imports increase so there is not any important variability).

The impulse responses to a government revenue shock can be seen as counter-intuitive. We find a positive response of GDP and private consumption to a government revenue

shock. Blanchard & Perotti (2002) as said above found different results that are more close to the Keynesian predictions. In the context of developing economies, positive effects on government spending are understandable. As previously said, in these economies, the government is the main investor and in many situations it is the first employer[35]. So once the revenue increases the expenses go the same way. Another argument to this could be the idea of "starving the leviathan". This argument was used to explain why fiscal policy is procyclical in developing countries. Indeed, when the economy is doing well, and the government is getting more revenue, the voters do not want the government to appropriate the rent so they ask for more public goods or higher wages (Alesina & Tabellini, 2005). Aware of that, the government increases its expenses after a revenue shock since it anticipate the political pressure from citizens. A government revenue shock has a small effect on the external sector and only the trade account deteriorates (the impulse response on REER remaining not statistically significant). The explanation is that the government can afford more goods and services from abroad after the shock and it is obliged to do so by its citizens in accordance with the "starving leviathan" idea already seen.

According to Favero & Giavazzi (2007) the impulse response estimated in VAR studies of fiscal policy shocks are all biased. The reason for this is that these studies do not consider the debt dynamics that arise after a fiscal policy shock. In other words, the response of tax and spending after a fiscal shock depends on the path the government has chosen to meet its intertemporal budget constraint and this depends on the level of public debt. Nevertheless this critique does not mean that the traditional VAR findings should be sent to the bin as only the very short run effects are indentified by this approach. The intertemporal budget constraint has to be met evidently, but as the shock is unanticipated (in this SVAR studies), in the short run private agents only focus on the "shock".

[35] Giordano & al. 2007 find the same "surprising" results to a government revenue shock.

2.6 Conclusions

After summing up our findings, one can see that in some way fiscal policy shocks have a different effect in developing countries compared to their industrial counterparts. Though the effects of a government spending shock can be positive for a developing economy in the sense that it brings growth and induces more consumption on the one hand, the effects seem to be the same after government revenue shock on the other. But the second aspect of these results means that there is a weak (or a less strong) private sector in the developing world. Compared to previous studies, this one addresses the important issue of non-stationarity of series. The numerous tests implemented have shown that some series were non-stationary. Once this issue is corrected, a noticeable change arises: impulse responses are shorter, the effect of the shock disappearing after four quarters on average. However due to weak automatic stabilizers in developing countries, impulse response of government revenues (even if series are purged from unit roots) was persistent.

For policy makers a possible response regarding the effects of revenue shocks could be the adoption of more transparent budgetary processes. Implementing a fiscal rule might add some discipline and afford some credibility to fiscal authorities. Weak automatic stabilisers, with the possible consequence of increasing procyclicality of fiscal policies, could be addressed with a larger government size (a long term process).

This study fills an important gap since such analysis has not been done yet for middle and low income countries. Despite the diversity of economic structures for countries in the sample, the analysis did not suffer much of that since SVARs are robust sample heterogeneity and the unit root test in a sense removes some inconsistencies in the results.

Future analysis may focus on ways and means to improve the credibility of fiscal authorities. As the third chapter in this dissertation will demonstrate, developing countries' main cause of fiscal policy inefficiency is due to the poor confidence of tax payers on public authorities.

Annexes Chapter 2

APPENDIX 1

Figure A.2.1: Impulse responses to Government spending shock (Structural ordering)

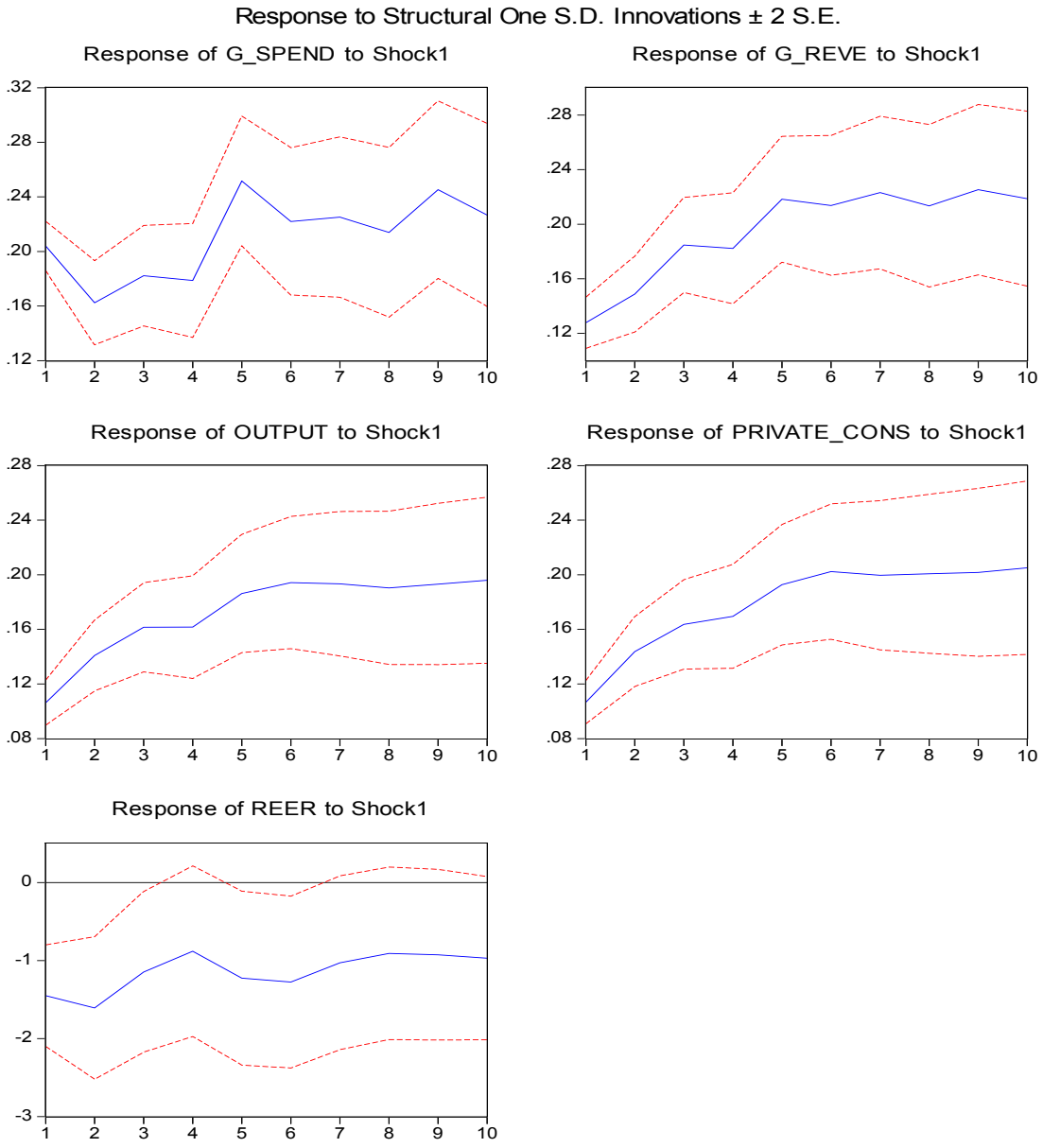
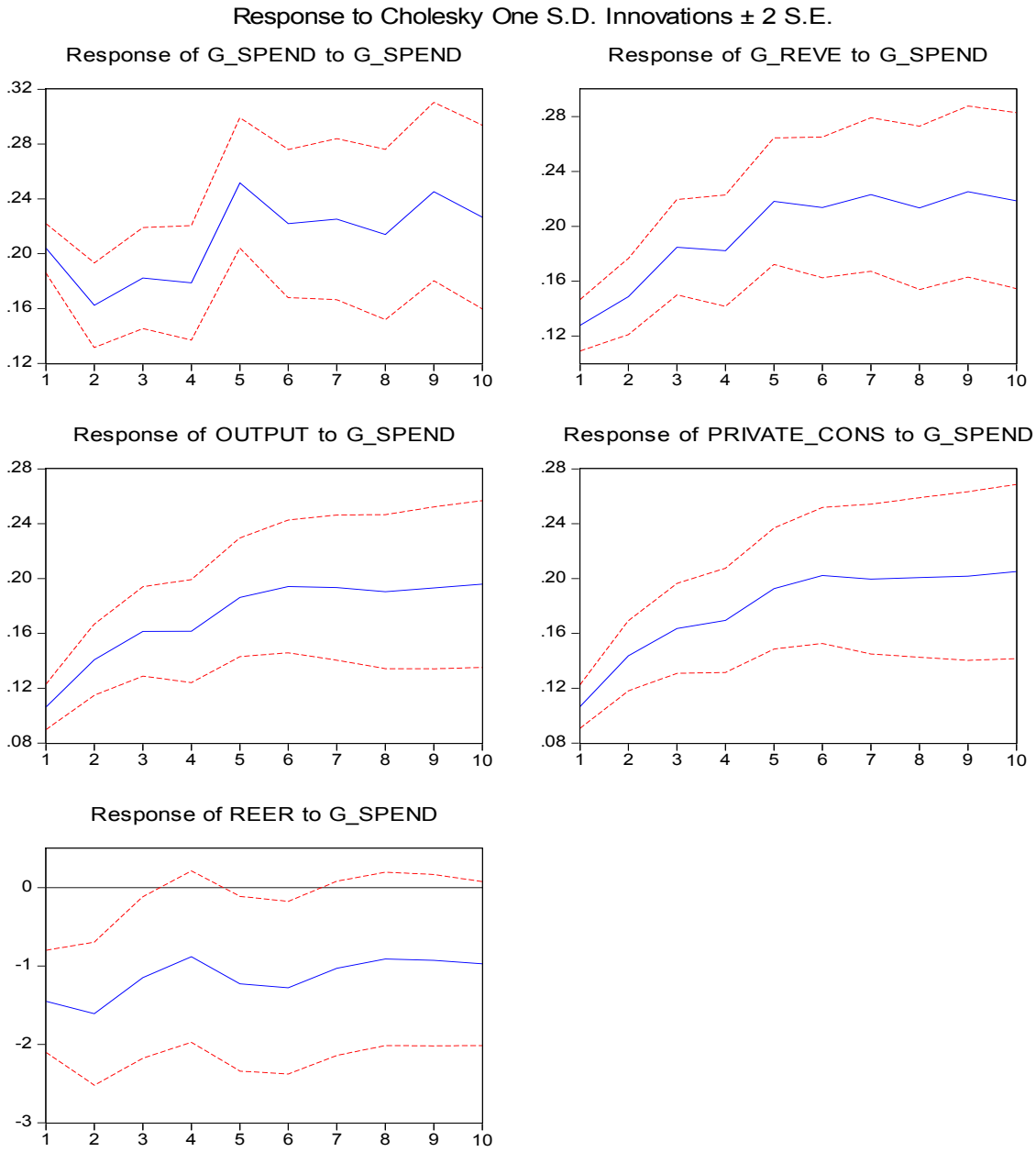


Figure A.2.2: Impulse responses to Government spending shock (Cholesky ordering)



APPENDIX 2

Figure A.2.3: Impulse responses to Government revenue shock (Structural ordering)

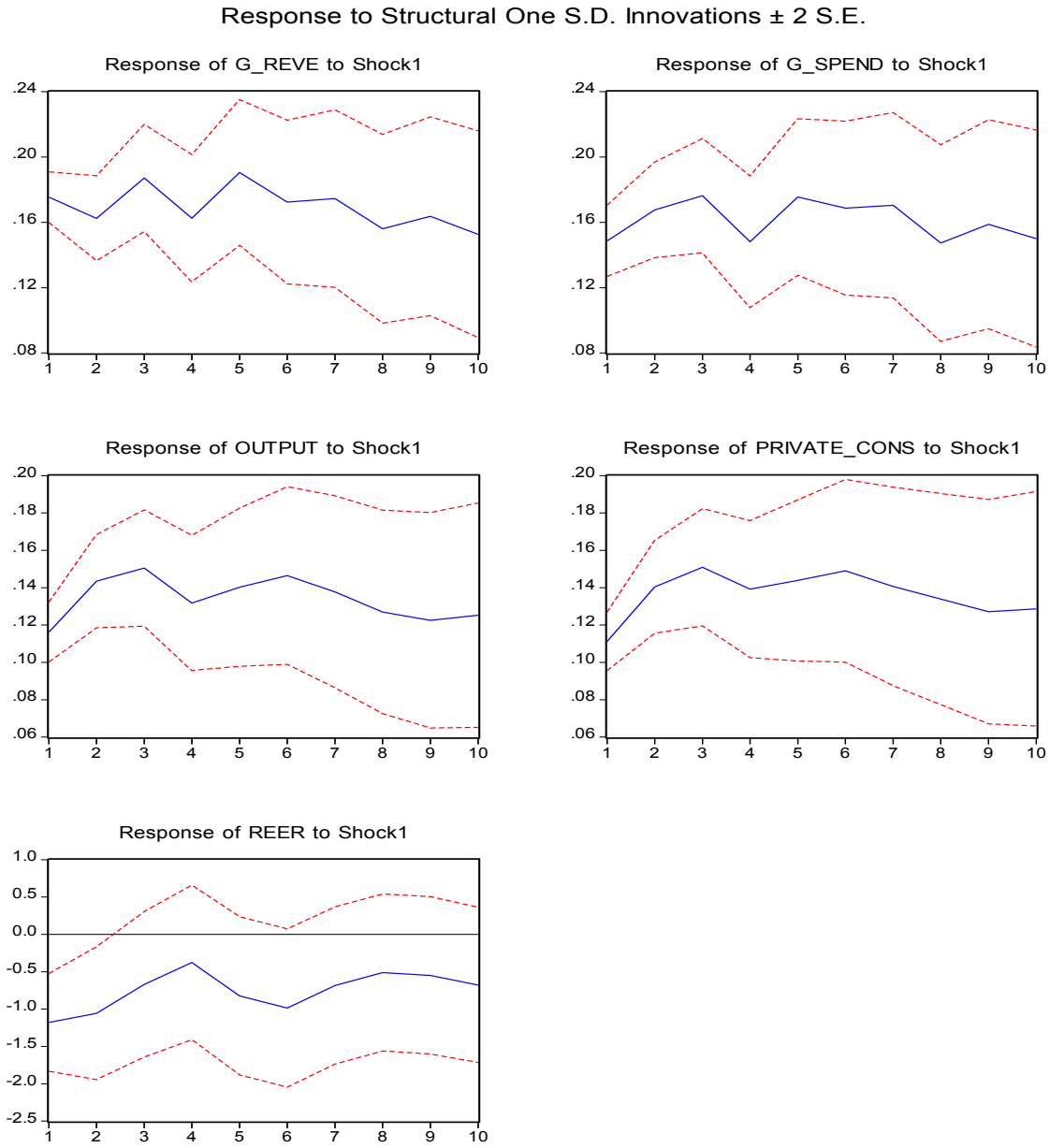
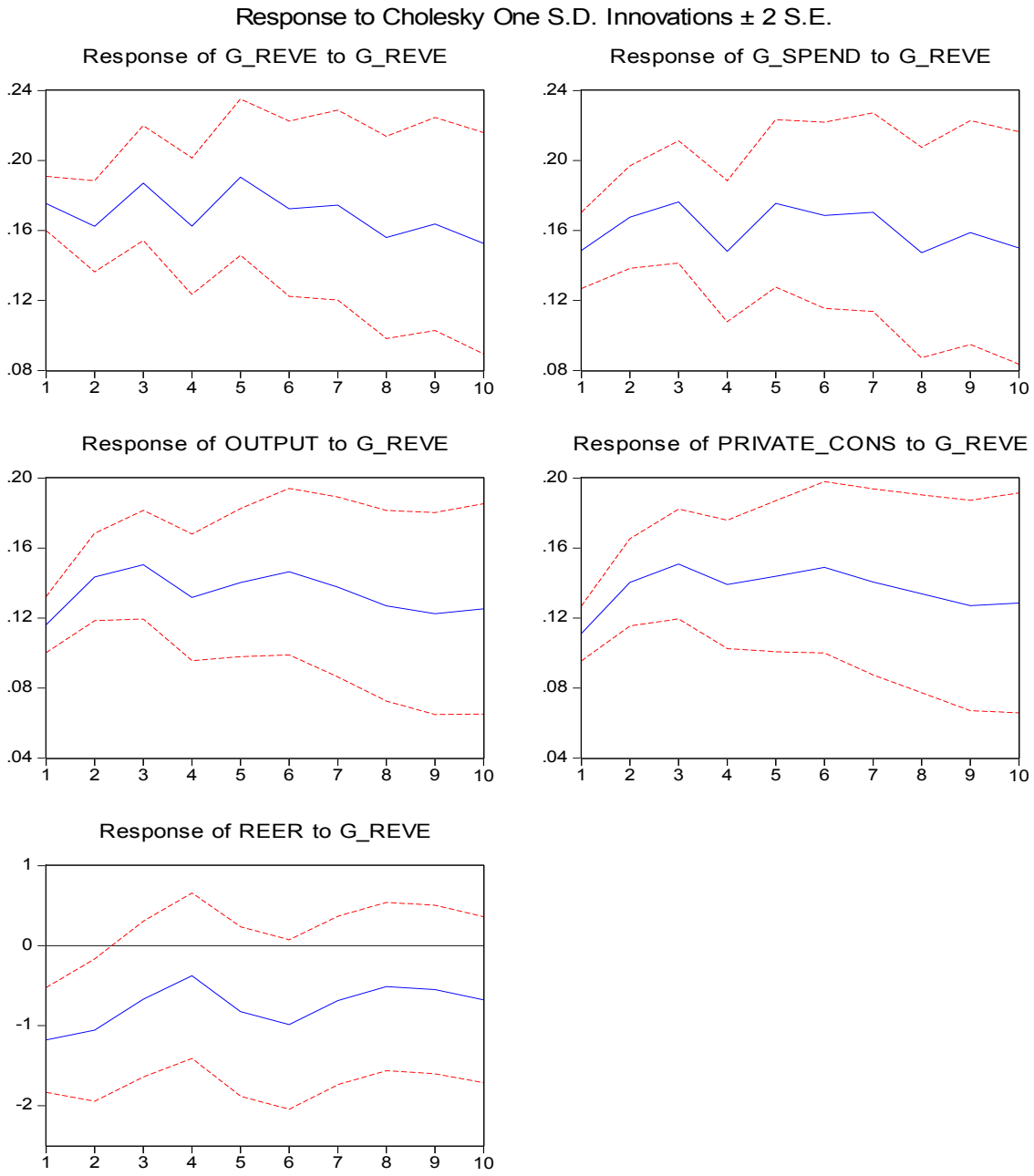


Figure A.2.4: Impulse responses to Government revenue shock (Cholesky ordering)



Appendix 3: List of Variables

Variable	Definition
Output	Real GDP per capita
G_Spend	General government spending: includes all major transactions that decrease the net worth of government (compensation of employees, purchase of goods and services, subsidies, social benefits, interest). IFS-2008
G_Reve	General government revenue: this includes major transactions that increase the net worth of government (taxes, social contributions and grants). This definition is as broad as data allows it to be. Since developing countries' sources of revenue are not only taxation. GFS-2008
Price	Consumer price index, IFS-2008
REER	Real effective exchange rate: based on relative consumer prices. IFS-2008.
Trade_Balance	Trade balance: balance of exports and imports. WEO 2008
Private_cons	Private consumption driven from data on "consumer price index": the cost of acquiring a fixed basket of goods and services by the average consumer. IFS-2008.

Appendix 4: SVAR Matrix

Structural VAR Estimates
Date: 01/24/11 Time: 15:20
Sample (adjusted): 1981Q2 2002Q4
Included observations: 282 after adjustments
Estimation method: method of scoring (analytic derivatives)
Convergence achieved after 8 iterations
Structural VAR is over-identified (3 degrees of freedom)

Model: Ae = Bu where E[uu']=I
Restriction Type: short-run pattern matrix

A =

1	0	0	0
C(1)	1	0	0
C(2)	0	1	0
C(3)	0	0	1

B =

C(4)	0	0	0
0	C(5)	0	0
0	0	C(6)	0
0	0	0	C(7)

	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	-0.803133	0.049224	-16.31603	0.0000
C(2)	-0.599033	0.033430	-17.91897	0.0000
C(3)	0.271954	2.579397	0.105433	0.9160
C(4)	0.232511	0.009790	23.74868	0.0000
C(5)	0.192194	0.008093	23.74868	0.0000
C(6)	0.130528	0.005496	23.74868	0.0000
C(7)	10.07131	0.424079	23.74868	0.0000

Log likelihood -801.2223
LR test for over-identification:
Chi-square(3) 56.51947 Probability 0.0000

Estimated A matrix:

1.000000	0.000000	0.000000	0.000000
-0.803133	1.000000	0.000000	0.000000
-0.599033	0.000000	1.000000	0.000000
0.271954	0.000000	0.000000	1.000000

Estimated B matrix:

0.232511	0.000000	0.000000	0.000000
0.000000	0.192194	0.000000	0.000000
0.000000	0.000000	0.130528	0.000000
0.000000	0.000000	0.000000	10.07131

Appendix 5: Panel Unit Root Test

Table 1

Panel unit root test: Summary
Series: **Private Consumption**
Date: 01/18/11 Time: 17:24
Sample: 1960Q1 2002Q4
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 7
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.42597	0.3351	10	429
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	5.11188	1.0000	10	429
ADF - Fisher Chi-square	13.5207	0.8539	10	429
PP - Fisher Chi-square	8.40285	0.9888	10	456

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 2

Panel unit root test: Summary
Series: **Government Spending**
Date: 01/18/11 Time: 20:48
Sample: 1960Q1 2002Q4
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 8
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	6.09230	1.0000	24	1495
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	7.44552	1.0000	23	1492
ADF - Fisher Chi-square	37.9217	0.8512	24	1495
PP - Fisher Chi-square	146.786	0.0000	24	1577

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 3

Panel unit root test: Summary
Series: **PRICE**
Date: 01/18/11 Time: 20:40
Sample: 1960Q1 2002Q4
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 12
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	12.0889	1.0000	34	4749
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	17.6911	1.0000	34	4749
ADF - Fisher Chi-square	15.6799	1.0000	34	4749
PP - Fisher Chi-square	8.85315	1.0000	34	4913

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 4

Panel unit root test: Summary
Series: **OUTPUT**
Date: 01/18/11 Time: 20:40
Sample: 1960Q1 2002Q4
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 7
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.03618	0.4856	11	457
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	6.20757	1.0000	11	457
ADF - Fisher Chi-square	12.1481	0.9542	11	457
PP - Fisher Chi-square	8.23494	0.9965	11	483

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 5

Panel unit root test: Summary
Series: **REER**
Date: 01/18/11 Time: 20:44
Sample: 1960Q1 2002Q4
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 6
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.31853	0.0102	34	3244
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.36108	0.0004	34	3244
ADF - Fisher Chi-square	143.726	0.0000	34	3244
PP - Fisher Chi-square	136.415	0.0000	34	3269

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 6

Panel unit root test: Summary
Series: **TRADE_BALANCE**
Date: 01/18/11 Time: 20:49
Sample: 1960Q1 2002Q4
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 1
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.70765	0.2396	13	241
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.26014	0.1038	13	241
ADF - Fisher Chi-square	48.5254	0.0047	13	241
PP - Fisher Chi-square	37.1985	0.0717	13	255

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 7

Panel unit root test: Summary
Series: **Government Revenue**
Date: 01/20/11 Time: 15:27
Sample: 1960Q1 2002Q4
Exogenous variables: Individual effects
User specified lags at: 0
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.05028	0.1468	24	1510
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.00654	0.0000	23	1507
ADF - Fisher Chi-square	143.014	0.0000	24	1510
PP - Fisher Chi-square	151.831	0.0000	24	1510

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Appendix 6

FigA.2.5: Response to Government spending shocks with stationary variables

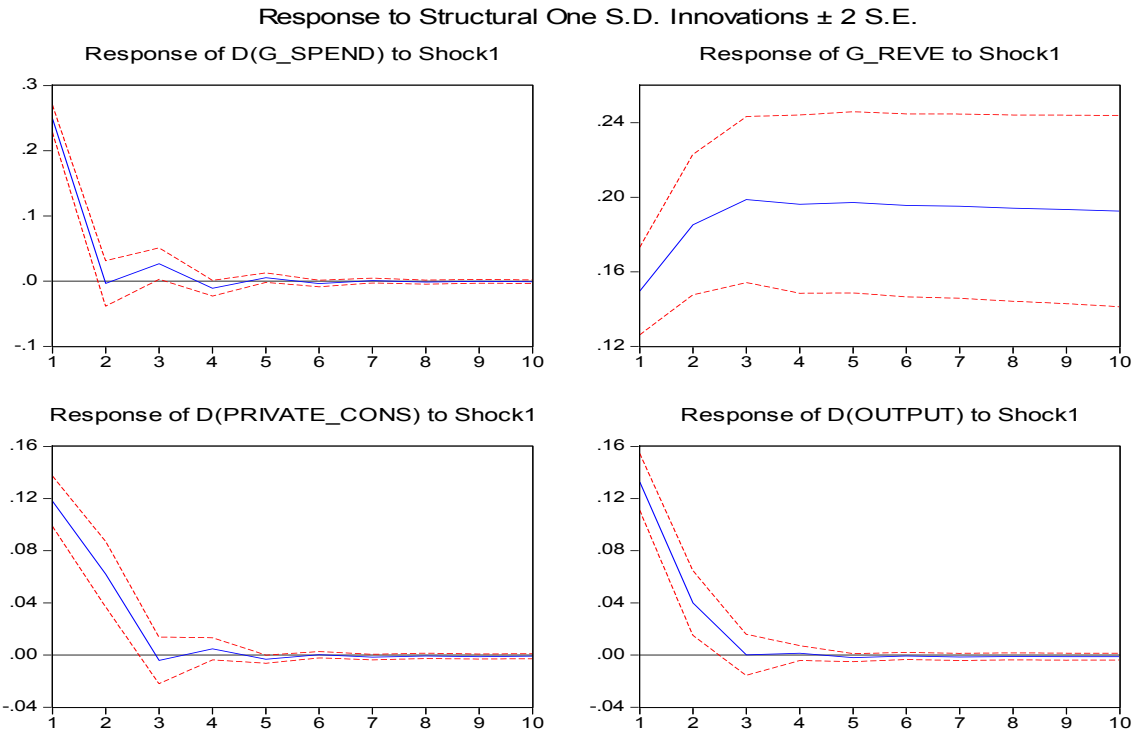
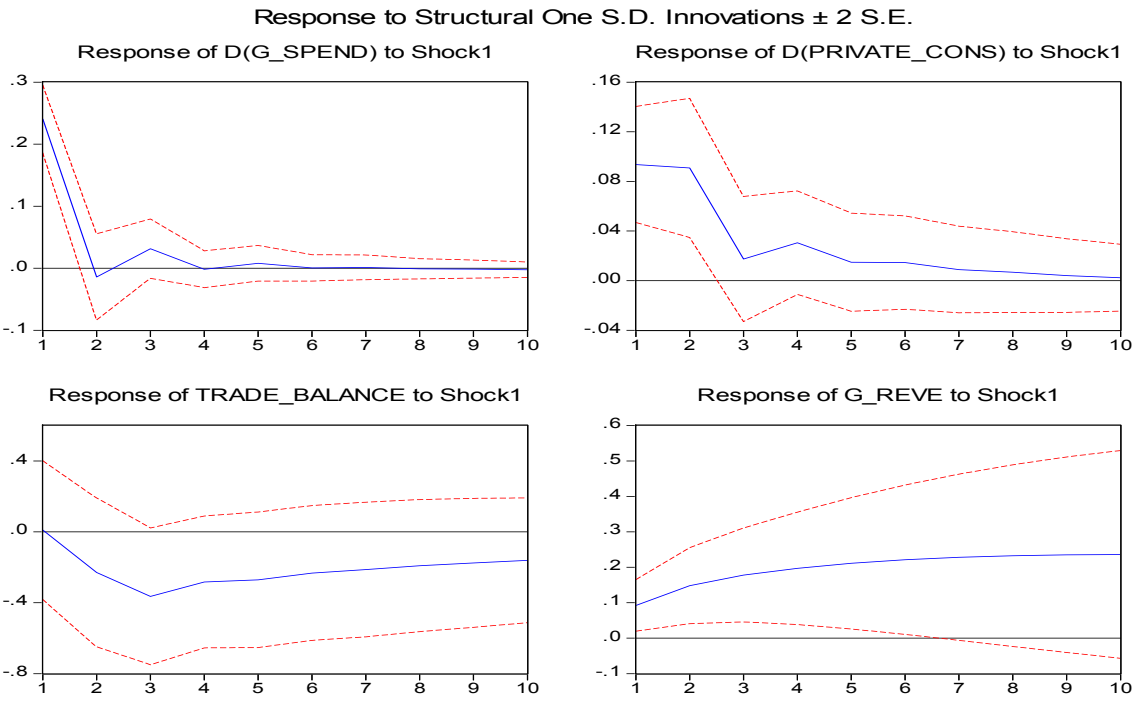
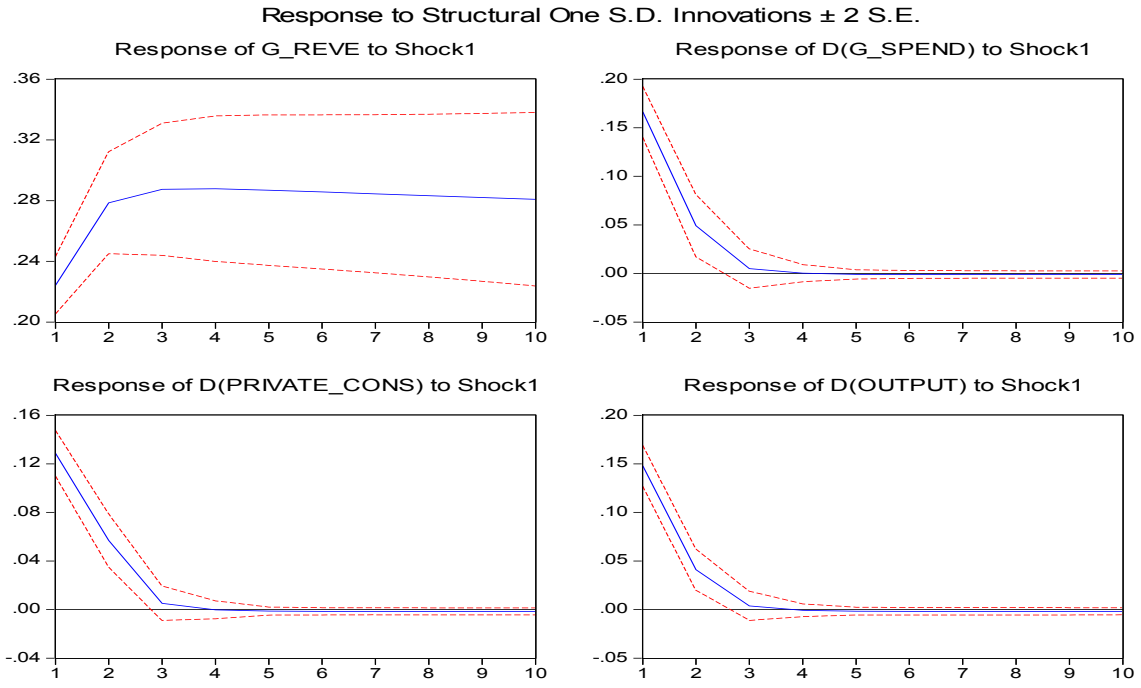


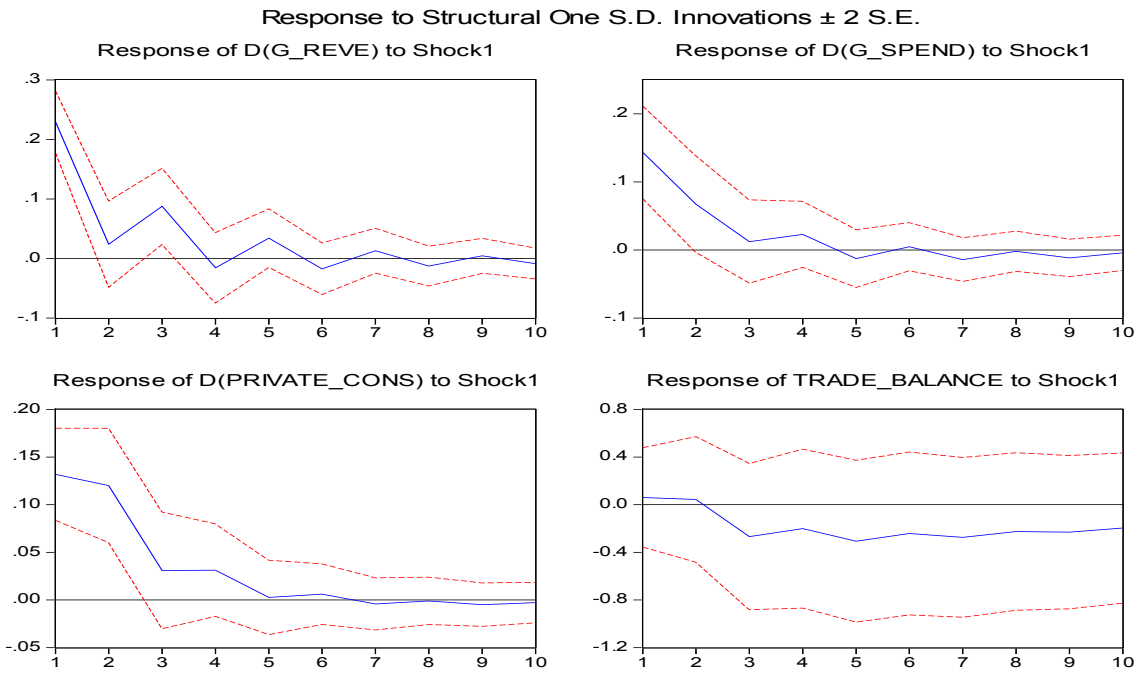
Figure A.2.6: response to government spending shock (after stationarization of variables)



FigA.2.7: Response to government revenue shock with stationary variables



FigureA.2.8: Response to government revenue shocks (stationary variables)



APPENDIX 7

List of countries

Bahrain, Kingdom of
Bolivia
Bulgaria
Burundi
Cameroon
Chile
Colombia
Costa Rica
Cyprus
Dominica
Dominican Republic
Fiji
Gabon
Hungary
Iran, I.R. of
Israel
Lesotho
Malawi
Malaysia
Malta
Morocco
Nicaragua
Nigeria
Papua New Guinea
Paraguay
Philippines
Poland
Sierra Leone
Singapore
Solomon Islands
St. Lucia
St. Vincent & Grens.
Uganda
Venezuela, Rep. Bol.

Chapter 3: Impact of Large Fiscal Imbalance in Advanced Countries on Developing Countries

3.1 Introduction

The financial and economic crisis, that started in late 2007 has shown how much developing and emerging economies are vulnerable to any economic turmoil in advanced countries. Indeed what started with the subprime problem in the USA spread out to the entire financial market and contaminated the real sector economy through several channels among which one can cite falling exports, higher interest rates and lower prices in the real estate sector in advanced economies. During autumn 2008, capital flows to developing countries started drying up (WEO April 2009). Given the dependence of such countries on external financing this leakage of capital flows caused an economic crisis and a downfall of confidence leading to a demand shock in developing countries.

Since the early 1990s, when important capital flows were invested in fast growing emerging countries, analysts believed that the cause of such inflows was the so-called "pull factors". Indeed some incentive policies in EMEs like market oriented policies, sound monetary policies, privatization and deregulation were believed to be the main factors determining capital inflows. However some empirical studies (e.g. Calvo & al. 1994 and more recently Felices & Orskang 2008) have shown from empirical estimations that "push factors" were more important in explaining determinants of capital flows. Namely, economic and financial conditions in mature markets explain the majority of capital flows to emerging markets. For instance, Fernandez-Arias 1994 argue that more than half of investments in emerging markets are due to lower return in the USA and in advanced economies in general. This argument is consistent with the idea that the rate of return of capital investment (marginal productivity of capital) is higher in middle and low income countries where the ratio capital to labor is lower than in Western countries. In addition to return rates, capital flows toward developing countries are highly dependent on output growth and availability of savings in source countries. While these channels are well documented and identified in the literature, the impact of fiscal policies in developed countries on emerging markets has received less attention in empirical studies.

What can be expected, in terms of investment in developing countries, when advanced markets face large fiscal imbalances and huge debt? In what follows I will be assuming that fiscal policy is countercyclical in industrial countries (Talvi & Vegh 2002, Alesina & Guido 2005); even if this answer is not clear cut and not unanimously shared in the literature. For some authors, in industrial countries, fiscal policy is rather acyclical than countercyclical. Meaning that, the fiscal balance is completely disconnected from the business cycles. However this argument does not weaken our assumption that large deficits happen during "bad times". Indeed, if one considers that fiscal policy is acyclical then, when the output growth slows down, the fiscal deficit (and debt) does not change that much. But since no study defends a procyclical fiscal policy in industrial countries, one can reasonably say that, periods of high increase of public deficit (and debt) correspond to economic downturn in advanced countries (Alesina & Guido 2005). This might be caused by the effects of automatic stabilizers which are (more) important in developed economies (compared to developing economies; Fatas & Mihov 2001, Debrun & Kapoor 2010). The theory, for which I will revisit the fundamentals, predicts that large deficit causes interest rates to increase in developed economies and this could crowd out investment in developing countries[36]. Also an increase in public deficit causes global savings[37] to fall, which in turn exacerbates the rise of real interest rates. In addition, usually during global economic crises, bonds issued by emerging countries are less attractive due to the decline in confidence on these financial assets. Indeed, the deflation in the price of goods exported by developing countries, due to less demand from advanced countries, keeps the confidence on the ability of developing countries to repay debt at a lower level.

This paper investigates the relationship between public finances in advanced economies and capital flows to EMEs relying on some identified transmission channels. As said above, these channels are threefold: higher interest rates in western countries; increased risk on developing economies' debt; and lower global savings. The main issues here are to

[36] The results of this paper confirm this crowding out effect since the fiscal deficit of advanced countries has a strong positive effect on emerging market interest rate spreads.

[37] Global savings refers to the aggregate national savings from industrial countries.

determine whether there is a direct impact of fiscal imbalances on investment flows to EMEs and, determine which has the greatest effect on investment between fiscal deficit and the stock of debt in rich countries?

In addition to such questions, it is important to run estimations that can clearly identify the effect of public deficit (or debt) for each industrial country considered in order to avoid spurious coefficients. The idea is simply that, the impact of US budget deficit has little chance to be of similar size as German fiscal balance on capital flows to Singapore for instance. Therefore, if usual estimation methods are used (OLS for example) the underlying assumption will be that all fiscal deficits exert the same influence on investors' decisions. Of course, running such reasoning is quite risky since no theoretical analysis can confirm that. A possible answer to that issue would be to introduce elasticities or weights (a geometrical mean similar to a calculation of real effective exchange rate) on the calculation of total capital inflows for each developing country, then run normal regressions (e.g. OLS). But this procedure might introduce some bias since the choice or the calculation of such weight can be hazardous. The second possibility is to find a way that allows to include all data without any calculation of average. A suitable database and the relevant empirical method therefore become necessary.

The CPIS database which is broken down by the economy of residence of the issuer of the securities, cross classified by type of security, offers a unique opportunity to address the issue of interactions between fiscal stance and capital flows. As it will be detailed later in this chapter, the gravity model is one of the most suitable methods to be used with such data. The gravity model gives the advantage of gathering a lot of information and helps to identify the bilateral fixed effect (these bilateral fixed effects consist mainly of country pair dummies).

The main findings of this paper are that there is a negative and strong effect of industrial countries' fiscal deficits on capital flows to developing countries. Also all emerging markets face the same risk, i.e. countries that have previously defaulted on sovereign debt are not perceived as more risky than other countries in terms of probability of default. The results also confirm that external factors such as growth, returns rate in advanced economies are dominant in explaining capital outflows. Alongside these factors the level

of risk related to debt issued by emerging markets is the key "pull factor" (internal factor to emerging countries). Based on these results, it clearly emerges that the relationship between budget deficit and capital flows is not linear. Indeed above a threshold, the fiscal deficit has inverse effects on capital flows to EMEs denoting that despite the deficit, investors resume their transfers toward the developing world.

In what follows, the concept of "developing countries" used here mainly refers to middle income (and upper middle incomes countries) rather than low income countries. Low income countries are not among the sample because data on portfolio investment are not available and these countries rarely request funds from the international (private) financial market.

The rest of this paper is organized as follows: In the following section, some determinants of capital flows and an overview of the literature on the relationship between fiscal policy, interest rates and capital flows are presented. The third section presents the model and the theoretical background, whereas Section 4 shows the data used and the empirical results. Policy implications and recommendations are shared and discussed in the fifth section, and the last section concludes.

3.2 Capital Flows in Developing Countries: History & determinants

3.2.1 After the first oil shock

Recent history of capital flows to developing countries has been characterized by periods of large inflows followed by crisis. For each episode, surge in inflows followed by a crisis, various determinants and explanations of the burst have been advanced in the literature. The first end of capital inflow to developing countries was in 1982 with the debt crisis in Latin America. Indeed, things started after the first oil shock as governments of advanced countries decided that private financial intermediaries would be more efficient than governments at recycling investments from oil producers to developing countries. The private intermediaries of choice were large commercial banks chartered in industrial countries (Dooley 2000). So banks were recycling all these funds by lending massively to governments in developing countries. This came to an end when the US interest rate suddenly soared, increasing at the same time the debt burden of public sectors in South American countries. At the same period, the price of primary goods fell, especially oil, drying up a bit more funding possibilities for developing American economies. Consequently the capital flow stopped and private banks in US and elsewhere in the developed world were in turmoil. Latin American countries represented at that time a great opportunity to recycle the excess of "petro-dollars" in commercial banks of advanced countries. These funds, from international banks, were for the developing countries the opportunity to finance important needs in both private and public investment. Suddenly, in the early 1980s, the Federal Reserve (FED) started implementing a tight monetary policy in response to growing inflation in the US economy (this inflation was mainly caused by high oil prices following oil shocks in the 1970s and the Iranian revolution in 1979). Restrictions on the money supply growth rate caused interest rates to soar up. And debtors who signed for floating interest rates contracts saw their interest payments almost double. Meanwhile the prices of primary commodities went down; for instance after 1981 Iranian oil production resumed, deepening the debt crisis in

developing countries. As one might observe, the determinants of this capital inflow and the causes of the crisis were both external to EMEs. Consequently, when investment became more profitable in the US capital flew toward North America bringing a depreciation of developing countries' currencies and huge loss of international reserves (Agénor 1999). Cumulated with a growing inflation, the real exchange depreciated caused a currency crisis at the end.

3.2.2 Capital inflows in the 1990s: internal and external causes

Nearly ten years later, the developing countries experienced a new surge in capital inflow. However this new episode of investment flows is quite different from the previous one since the international environment and the characteristics of the inflows have changed. Indeed, during the 1970s, capital flows from commercial banks were almost exclusively in the form of lending to the public sector. This led to a debt crisis and default by some countries (for instance Mexico suspended its external debt repayment in August 1982), leaving countries with a large fiscal deficit and higher levels of inflation. In 1989, following an agreement between Mexico and its external banks creditors based on the Brady plan[38] (Buiter & al. 1989), a new episode of capital inflows started. The Brady plan asked highly indebted countries to implement structural reforms consisting mainly in serious programs of stabilization, market oriented structural reforms (e.g. privatization, capital account liberalization). For countries like Mexico, deep reforms were introduced. Indeed, the country switched to a heterodox approach to tackle the high level of inflation (implementation of nominal anchors, agreement between private and public sectors to freeze wages and prices). Furthermore, the financial sector was reformed. The reserves requirement was replaced by a 30% liquidity ratio, time controls on interest rates and maturities were abolished (Agénor 2008). A change in the legislation, in 1990, allowed full

[38] In 1989 Nicholas Brady, US treasury secretary at that time proposed a plan aimed to help developing countries to come out of the debt crisis. The developing countries would implement substantial economic reforms. Commercial banks creditors should reduce their claims in exchange they would get credit enhancements. 16 countries implemented the Brady plan.

private ownership of banks. This reform in turn induced private capital (FDI and portfolio) inflows to resume.

For Mexico and Thailand (later in 1997) these flows came to an end. The causes were quite similar. First, in both countries the initial conditions that created vulnerability and weakened them toward all external or internal shocks were already there. There was slow output growth during this period (1990-1997) cumulated with an over-appreciated exchange rate, a deterioration of the current account balance (despite public sector finance improvements) due to an excess of investment over savings. In order to fight inflation, Mexico for instance, implemented a tight monetary policy with higher domestic interest rates. This encouraged more speculative capital flows and worsened even more the current account deficit. At the same time, the country experienced slow economic growth due to a lack of demand induced by the real appreciation of the currency. The situation was similar in Thailand, where short term capital flows increased sharply from 1990 causing inflation to rise, deteriorating the current account and appreciating the exchange rate. The conditions in the financial system were not better due to a misconceived liberalization. Demand for loans was sustained despite high real interest rates. This was due to the inflated assets used as collaterals by borrowers leaving financial institutions vulnerable to any downward adjustment of assets to inflation. Moreover both countries tried to fight the overheating economies using only tight monetary policies, fiscal policy being inadequately inflexible.

However as Agénor (2008) underlines it, despite all these vulnerabilities in emerging economies, in the absence of negative shocks, a crisis would have been avoidable (Agénor 2008). As one will see later, the external shocks (which will be referred to later as the push factors) triggered the crisis. The US Federal Reserve (FED) during this period started changing its monetary policy, increasing Treasury bond yields. Therefore causing a risk-adjustment by investors, who preferred to purchase US securities. For South-Asian countries the sudden appreciation of the US dollar against the Japanese Yen depressed exportation from these countries as their REER was appreciating against Japan, their main trade partner. Also economic conditions in Europe and Japan, with weak demand, contributed to precipitate the crisis. The manifestation of the crisis was through a

speculative attack on the EMEs currencies as they were overvalued and investors anticipating a nominal readjustment in the short term.

These key points are intended to point out that despite internal unfavorable conditions; the triggering causes of the crisis were the situation in advanced markets (monetary policy in USA, Japan and West-Europe economic downturn). Once again, this fact highlights the relevance of "Pull factors" when one explains capital flow motivations.

More recently in 2007, a major financial crisis hit the world economy. The condition and localization of this latter crisis are completely different from the previous one. This episode originated in the world leading economy and spread out to the real sector and outside US borders. The objective of this chapter is however not to discuss the financial crisis; our main issue being to identify the link between fiscal loosening in the developed world and capital flows to EMEs. From the previous crisis we have learnt that the rates of returns and economic conditions in advanced countries were the dominant factors driving capital investments. Using these stylized facts in this study will give a first intuition on the expected outcomes.

3.3 Related Literature

3.3.1 On the effects of fiscal variables on interest rates in industrial countries

The "common wisdom" is that fiscal deficit and debt cause real interest rates to increase. Budget balance impacts on interest rates through two channels mainly: risk premium and crowding out effects. Gale & Orszag 2003, Barth & al. 1991, Cohen & Garnier 1991 found that public deficit has a positive effect on interest rates in developed countries. Gale & Orszag 2003 found, on the US economy, that each percent of projected future deficit raises interest rates by 40 to 70 basis points. Laubach 2003 using CBO and OMB[39] projections found that a one percent increase in projected deficit raises forward

[39] Congressional Budget Office (CBO). Office of Management and Budget (OMB).

long-term interest rates by 24 up to 40 basis points. Engen & Hubbard 2004 on their side have similar outcomes but with a smaller coefficient; according to them, a percentage increase in deficit raises interest rates by 12 basis points. This relative low coefficient, for some authors (e.g. Cohen & Garnier 1991), could be due to the VAR framework. For Cohen & Garnier 1991, studies that do not find an effect of deficit on interest rates are mainly those using VAR specification (e.g. Evans 1987, Plosser 1987). The bottom line of such methods is that VARs are based on a limited number of variables and this might induce certain analysts to ignore some information which is relevant for market participants.

However this shortfall cannot be extended to all VAR specifications, for instance, when SVAR are used with the right constraints it gives interesting results (e.g. Dai & Philippon 2004 found that a percent increase in deficit over GDP raises government yields – 10-year bond yields – by 41 basis points).

All the studies cited above use the level of anticipated deficit to assess the impact of the state of fiscal accounts on the financial sector. For Feldstein (1986) it is inappropriate to use the current budget deficit since financial markets are forward looking. Therefore, expected deficit is more relevant. But other studies, using an "event analysis" try to assess the behaviour of financial markets when information on future government spending and/or deficit increases. Elmendorf (1996) found that immediately after the announcement of higher spending, financial markets expect higher deficit and debt and at the same time interest rates rise. On the same strain, Ardagna (2009) analyzed from an annual data set of 16 OECD countries from 1960-2002 the effect of changes in the fiscal stance on several financial variables including government and corporate bonds yields, on market stock prices and on LIBOR interest rate. His results show that, in a period of fiscal consolidation, government bond yields fall by 124 basis points and in a period of fiscal expansion, government bond yields rise by 164 basis points.

A key issue is raised by Hauner & Kumar (2006): Did the main determinants of real interest rates change overtime? In other words, do we have new factors influencing interest rate instead of traditional determinants such as budget deficit, foreign interest rates, real money supply, inflation and expected return of investment? If the answer to

this question is affirmative, then one should expect only a very marginal effect of fiscal deficit in industrial countries on the financial sector especially on capital flows toward emerging markets. They noticed that despite large fiscal imbalance and public debt in G7 countries, the long-term bond yields have remained at a low level. From 1960-2005, the interest rates were relatively low not because of a "new economy" of interest rate but rather the investment motives have changed a bit. Indeed investment in G7 countries (investment mainly in the form of reserves from emerging central banks) are not motivated by return rates but by insurance. The investors are willing to accept relative low returns from their capital in lieu of placing the money in safer "shelters". These findings confirm that the traditional (or structural) determinants of interest rates still hold and what was observed during this period was just cyclical. Therefore one can expect that in an unusual period of huge fiscal turmoil the "traditional" determinants recover their importance.

This survey underscores two facts. First, in advanced markets the fiscal deficit is a key determinant of the interest rate level. This is basically relevant to this paper since one of my hypotheses says that a channel through which fiscal deficit in industrial countries impacts on capital flows could be the global interest rate. Whichever one is considered, the current fiscal deficit or the expected fiscal deficit, the effects on interest rates are substantially identical. Second, since the main determinants of interest rates in Western Countries did not change overtime, I expect our fiscal variables (through some transmission channels) to influence the capital flows.

3.3.2 Importance of external factors for capital flows toward EMEs.

3.3.2.1 Relevance of Domestic or Pull Factors

Investment in developing economies, whether FDI or portfolio flows, is determined by two sets of factors: internal or "pull factors" and external or "push factors".

After the debt crisis in the late 1980s, EMEs engaged in deep structural reforms. Capital account was liberalized, deregulation of domestic financial markets (for instance reserve requirements were lowered and this encouraged financial intermediation) privatization and removing restriction on foreign investments were among the most important changes introduced. Almost all EMEs abandoned financial repression policies, and with the increasing integration of markets, these economies became a great opportunity for capital seeking higher returns. These reforms were followed by a relative long period of capital flows toward EMEs in South-Asia and Latin America (Fig3.1, Fig3.2).

The internal conditions induced by reforms played an important role during this process of investment inflow. This result appears to be straightforward when one has a look at other developing countries that did not implement such reform and compare the amount of foreign investments between the two groups (Fig3.1). For instance in Fig3.1, low income countries received a minor share of international investments during the whole period (1980-2006).

Fig3.1: Portfolio Bond Investment Flows across developing countries

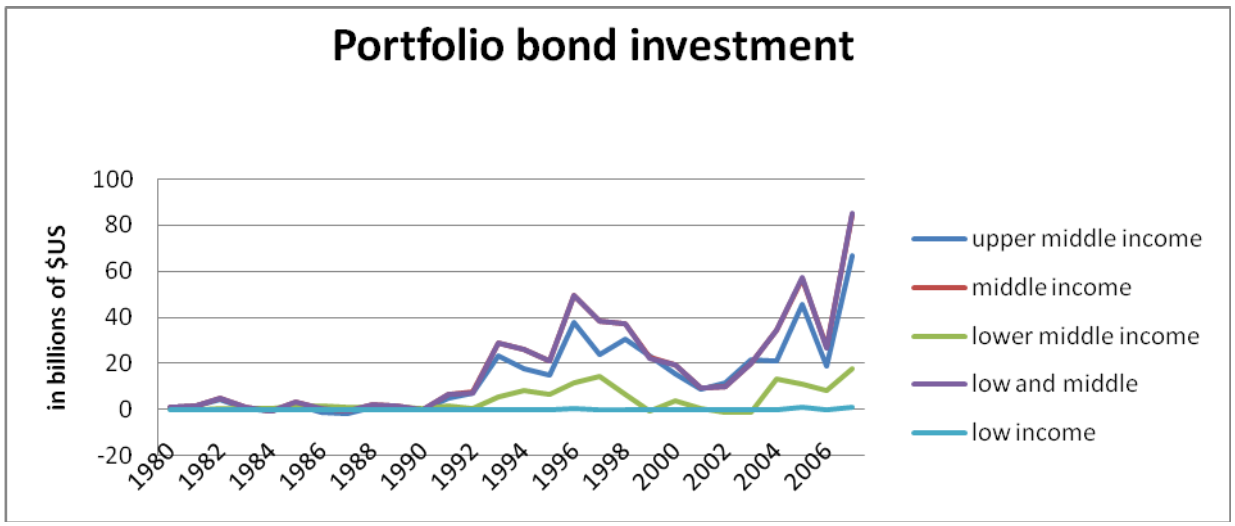
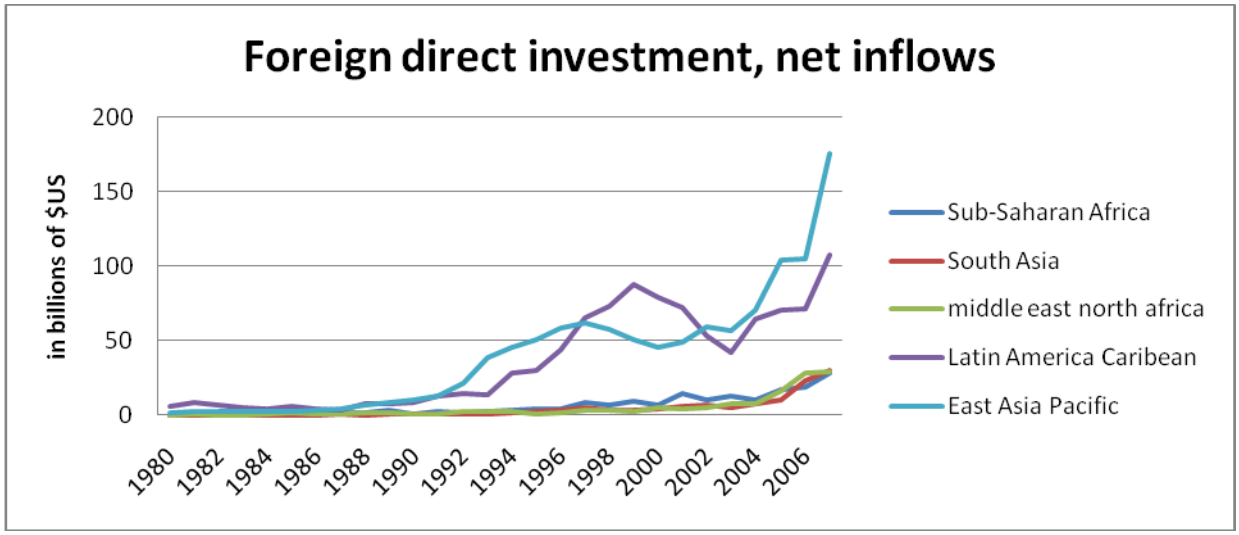


Fig3.2: FDI inflows across regions



3.3.2.2 The External or Push Factors

If these factors are important in explaining capital flows to EMEs, then one can expect industrial countries' public finances to highly influence capital flows.

One of the usual external factors cited in the literature is the risk-return characteristics on securities issued in developed economies. Indeed when interest rates are low in issuing countries, capital flies out seeking higher returns in emerging markets. For instance, when in the early 1990s the US changed its monetary policy and lowered interest rates to stimulate activity, such measure caused capital to run to EMEs where returns were higher.

In addition, world interest rate can affect EMEs through other channels. Indeed lower interest rates discourage private savings in industrial countries and enhance private consumption. This will lead to higher exports from developing economies (as will be seen later in this chapter), which in turn improve the solvency of EMEs. For instance, the main channel through which the later financial crisis in advanced countries spread out in EMEs was the global demand. Indeed, after the subprime crisis, global demand shrunk and the exporting sectors in developing countries saw their activities severely sliced.

The 1990s also saw deep changes in financial institutions in advanced economies. The increasing role of pension and mutual funds, the development of securitization reinforced the diversification needs. Therefore, the portfolio investment in developing countries increased and became a wide funding source for these countries.

3.3.3 Fiscal Issues and Capital Flows

As said above, fiscal stance in advanced countries has an impact on their interest rates which in turn, intuitively one can say, have consequences on emerging market economies. The reason is that macroeconomic policies in industrial countries determine the global financial environment. Goldstein & Khan (1985) identify a first link which is through the procyclical nature of demand in industrial countries for goods produced in developing countries. Specifically, in good economic times, the demand in OECD countries for exports from EMEs is high but in periods of economic downturn their imports decrease. The corollary effect is lower prices of developing economies' exportations[40] in bad times.

Emerging economies are also dependent on the level of national savings in partner countries. As Frankel & Roubini (2001) emphasize it, capital flows toward EMEs is largely dependent on the balance of investments and savings in rich economies. Excess of savings in the developed world combined with profitable investment in EMEs create a flow of capital. Inversely when one of these two elements is missing, when return rates or savings are low, the capital flows dry out or worse this could result in capital outflow. For instanc,e some analysts link the unprecedented capital flows to developing countries during early 1990s with the US record high level of national savings.

The exchange rate policies of Western countries play an important role in emerging countries' access to capital and more generally in their economic and financial stability. Developing countries are vulnerable to sudden variations and frequent fluctuations of

[40] For instance Frankel & Roubini (2001) give the example of the recession among industrialized countries in 1980-82 that depressed prices and volumes for developing countries' exports and this led to the international debt crisis.

major currencies. Indeed Frankel & Roubini (2001) among others reminded us that one cause of the Asian crisis in 1997 was the sudden appreciation of the US dollar against the Yen. Since most of these countries were pegged to the dollar, when it appreciated they faced loss of competitiveness, loss of reserves and large current account deficits (therefore speculators attacked some EMEs currencies).

On the whole, this section sheds light on a key argument: the economic state of emerging markets and their access to foreign investment is highly procyclical depending on macroeconomic cycles in Western countries. Output growth, interest rates and trade policies are the main factors discussed in the literature, however fiscal policy and especially fiscal balance deserve more attention in this context of global crisis.

Actually the issue could be summarized by one question: how likely exit strategies (mainly fiscal stimulus) in advanced countries could deepen the crisis in EMEs by drying out investments?

3.4 Theoretical Background and Modelling

3.4.1 Theoretical motivations

This section will review (even though main channels were discussed in previous sections, the following lines will be a summary) the channels of transmission through which fiscal policy in developed countries will impact on capital flows to the developing world.

3.4.1.1 Possible channels

Global saving: The first direct effect of large deficit is less availability of national saving in industrial countries (FigA.3.4). This fall is not only due to less public saving but also to a possible decline in private saving (Frankel & Roubini 2001). Therefore in these situations less capital will be available for investment in emerging economies.

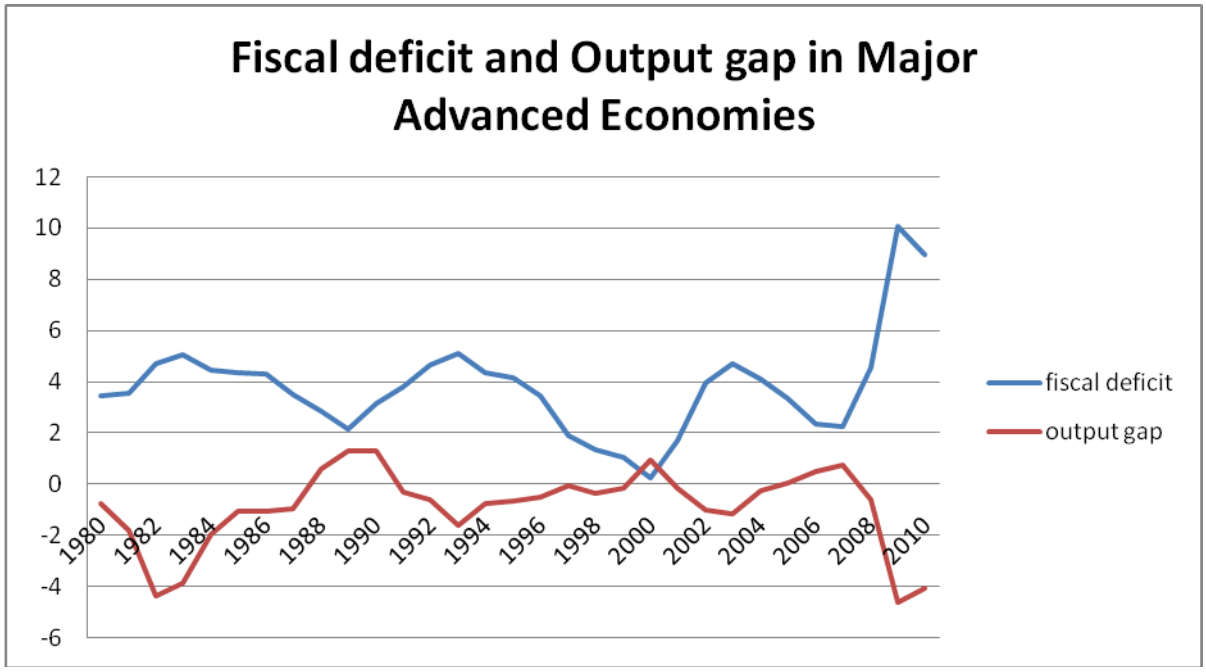
Macroeconomic policies & return seeking: As already mentioned, external factors ("push factors") are the most important factors in explaining investment in EMEs. Therefore, this kind of capital flow is very sensitive to macroeconomic conditions in source countries (advanced countries) and especially sensitive to profitability and risk. The level of interest rates, for instance low interest rates, in industrial countries can be the result of easing monetary policies and/or a consequence of some "unorthodox" fiscal policies. In any case, the effect will virtually be the same, but becomes worse when the cause is fiscal[41]. When interest rates increase in developed countries, savings remain in countries of origin where the profit is higher and the level of risk might increase in EMEs as well.

Risk on Debt: High level of fiscal deficit in advanced economies (as said above) happens when the economy is decelerating (Fig3.3). This fact drags along two negative consequences for EMEs. First interest rates raise in developed countries and the effects have been discussed above. Second there might be a crisis of confidence on EMEs financial assets since investors believe that they are less able to repay loans. The reason is simply that most developing countries rely on export proceeds for debt repayments. When prices depress and interest rates go up, the investment return is believed not to be guaranteed (compare to US treasury bonds for example).

These are, briefly presented, the channels of transmission underlying our analysis and framework. In what follows I will present the model and the data used to assess the hypothesis.

[41] Since large fiscal deficit occurs in periods of global economic downturn, any reduction in capital flows creates severe financial and economic crisis in EMEs because of their vulnerability and dependence toward external capital.

Fig3.3: Fiscal deficit and Output gap in Major Advanced Economies[42]



3.4.2 The gravity model of impact of fiscal imbalances in industrial countries on capital flows.

Gravity model is "conventionally" used in issues like trade flows between countries and controlling for gravitational forces such as distance and weight. It is usually added to the specific factors of countries as well as bilateral factors to capture any trade resistance or incentive. In this analysis, the gravity model helps to explain the extent to which foreigners will hold financial assets (private and corporate bonds) issued by another country. As Portes & Rey 2005 underlined it, Gravity models can explain transaction in financial assets between economies at least as well as trade on goods. Trade in bonds like any other exchange of goods and services depends on three sets of factors; factors

[42] Output gap is computed as the difference between current output and the potential output. Therefore this diagram tells that in a period of higher deficit the output gap widens (becomes "more negative").

specific to the destination country, factors unique to source countries and a set of factors common and shared between (financial) partners. Usually the decision to buy bonds issued by a country is made according to some characteristics of the issuer country like the size (which can be captured by the population or the GDP), the soundness of macroeconomic policies, political environment, etc. On the other hand, the size and the economic conditions in the source country (purchaser) are key determinants in the decision to invest abroad or not. For instance the return rates in the source country are one of the most important elements in the decision to buy EME bonds, as previously said. Additional to this Ghosh & Wolf (2000) argue that geography also matters in explaining financial flows. Ghosh & Wolf (2000) found that distance between countries, common language, shared borders or not, are some of the geographical variables that could influence the flows of capital.

However, in my estimations I do not expect that these geographical variables to play an important role. Since the 1990s (period considered by Ghosh & Wolf 2000) many things have changed and technology and computing facilities have improved a lot. Therefore physical distance, sharing a border or not, same language or not seems to be obsolete concepts while studying decision making in the financial market. Nevertheless distance can still be relevant. Indeed an investor can feel more comfortable to invest in a relatively near market. Therefore these geographic variables will be considered in this analysis for robustness purposes.

Moreover the gravity model is a suitable way to avoid the loss of information. Indeed, if I would have used normal aggregate data for this study I would be computing the mean of industrial countries series at least for fiscal deficit variables. This poses the problem of the robustness of any findings since we aggregate deficit from different countries with different economic size and different influence on a given emerging country. For instance if we consider Argentina and look at the impact on capital inflows of deficit of all G7 countries, one will consider that US and France have exactly the same impact on Argentina. Theoretically this argument is weak and hard to defend.

3.4.3 The Data: The Coordinate Portfolio Investment Survey

The Coordinated Portfolio Investment Survey (CPIS) database is an IMF survey on capital flows for 75 countries, both developing and advanced economies, which offers a great opportunity to access data on bilateral capital flows. Many series in CPIS data have been available since 2001 (only some data is also available from 1997). For each country, it provides information on individual economy year-end holdings of portfolio investments and debt securities valued at market prices cross classified by the country issuing the securities[43] . From that point, I re-managed the data in order to make it suitable to the actual issue in this paper. Indeed, I only consider the capital flow in one way, which is, securities issued by EMEs and sold in industrial countries. The rest of the data management consists in matching countries and identifying economies for which any data is recorded.

Later in the analysis, the total debt securities will be the variable of interest. It is the total of long term and short term debt securities. The database considering exchange of bonds in one direction only, issued by EMEs and sold to foreign investors, is partly justified by this fact. Indeed due to poor availability of short term debt security issued by industrial countries and bought by investors in EMEs, this variable could not be implemented for capital outflows towards developed markets. The other main reason is related to the rationale of the analysis in this chapter which focuses on the fiscal influence of developed countries on portfolio investments to EMEs.

The CPIS has already been used in previous studies as in Eichengreen & Luengnaruemitchai (2006). These authors were mainly interested in assessing and comparing financial integration between different regions (East Asia, Western Europe, Eastern Europe and Latin America), and used the CPIS database on a gravity model.

Despite an increasing use of the CPIS database some limits still remain in it. Indeed, some information such as Central Bank reserves are not recorded (countries refusing to release such sensitive data). Also, important countries, in terms of large portfolio holdings, like

[43] Details on CPIS database are free of charge and available online at: http://www.imf.org/external/np/sta/pi/cpis.htm

China, Saudi Arabia and United Arab Emirates did not participate in the survey. Therefore, this might undermine some results especially those comparing financial development between countries or regions. Finally, the database does not record corporate and government bonds separately, it only reports the sum of both bonds. Regarding this study, these inconveniences are not expected to influence the results. The missing countries (China, Saudi, UAE) will definitely cause a loss of information but will not change the impact fiscal deficit might have on capital flows. This is simply due to the fact that what drives investment in Hong-Kong might not be far from the motives of portfolio holdings in Singapore. Additional to that, the CPIS covers interesting periods. For instance this period considers the sovereign default of Argentina and the Turkish financial crisis. Also, the end of 2003 was characterized by low global interest rates and an increase in cross border investment (Fig A.3.5).

3.4.4 The estimation Method: a panel Gravity Model

3.4.4.1 The theoretical background and discussion on gravity modelling

The gravity equation was first developed by Anderson (1979). The main idea is after controlling for size and distance, trade between two regions is decreasing in their bilateral trade barriers relative to the average barrier to trade between the two regions (considered) and their other partners. Namely trade between two regions will increase the more important are barriers between a country and the rest of its partners. This is idea is namely the "multilateral trade barrier" developed by Anderson 1979; Anderson & Wincoop (2003)[44] in response to McCallum's (1995) (biased) equation and unexplainable findings. Indeed, McCallum (1995) found that the US-Canadian border caused an increase in Canadian inter-provinces trade while the change in inter-American State trade was

[44] In the full version of this paper the Anderson & Wincoop (2003) model is presented and compared to McCallum.

relatively insignificant[45]. This was considered as one of the most challenging puzzles in open macroeconomics (Obstfelt & Rogoff 2000). To address this issue Anderson & Wincoop (2003), Adams & Cobham (2007) used the same model as McCallum augmented with some multilateral resistance variables. These multilateral resistance variables are meant to capture the impact of barriers between a country and other trade partners (different from the main partner considered). Also these authors consider that results from studies, like McCallum (1995), which do not take this concept of multilateral resistance into account, as suffering from biased coefficients due to omitted variables. This limit to previous studies on gravity equations does not seem to affect that much the estimation results. Anderson & Wincoop (2003) found almost the same results as McCallum, the only difference being the size of the coefficient (McCallum's coefficient being higher). When they introduce the multilateral resistance, which is the trade barriers across all countries, a response to the puzzle is provided. Indeed the trade between Canadian provinces is a increasing factor with border with the USA since these provinces are less integrated to the world trade. On the other hand, US states are more integrated to the world economy so when trade with Canada decreases, the inter-state trade does not follow this trend. This is simply due to the fact that their exchange with the rest of the world is not affected.

However while these analyses are relevant regarding exchange of goods where one has imports and exports, our study seems to be closer to the McCallum modelling. Our analysis focuses on bond sales by EMEs and purchased by investors in advanced countries. Therefore investment on financial assets has only two alternatives, EMEs bonds or industrial countries bonds[46]. These two possibilities are captured by the interest rate effect on capital flow and other control variables I include. Also, since financial integration between developing countries is relatively weak (Eichengreen,

[45] Trade between Canadian provinces was a factor 22 (2,200%) times trade between US states and Canadian provinces; while Anderson & Wincoop have a factor of approximatively 16 times.

[46] Regarding the latest financial crisis, another possibility has emerged which is deleveraging. The onset of the crisis has caused a capital outflow from EMEs even though the yields in advanced economies were still low. This capital outflow was mainly motivated by deleveraging since investors and banks needed to clean up their balance sheets.

Luengnaruemitchai 2006), considering the multilateral resistance to trade on bonds may be irrelevant in this analysis. If Ohmae's (1990) assessment, arguing that distance and borders have ended in the world trade, was almost unanimously rejected; for trade on financial and derivate assets this could come true.

McCallum's equation:

$$x_{ij} = a + by_i + cy_j + ddist_{ij} + eDUMMY_{ij} + u_{ij} \quad (1)$$

x_{ij} is the logarithm of goods shipments from region i to j, y_i and y_j are the GDP in regions i and j, $dist_{ij}$ the distance between i and j and $DUMMY_{ij}$ a dummy variable equals to 1 for inter-provincial trade and 0 for province-to-state trade. McCallum's data consist in imports and exports for each pair of Canadian province (10 provinces) and exchanges between the 10 Canadian provinces and the 50 US states. While after adjustment they have quite a good sample coverage (683 observations), their estimation may suffer from missing variables (this criticism can also be directed at Anderson & Wincoop). Including solely the GDP as a control variable is not enough since other variables, such as current account position and inflation can affect trade and GDP as well.

In our analysis, I address this issue by augmenting the McCallum model in two ways. First I introduce relevant control variables for each group of countries and second I consider bilateral fixed effects. The latter captures the common invariable effect between purchaser country and issuer country. Namely it introduces a country pair dummy.

3.4.4.2 Data and Series in the model

The data base is built in order to have series on industrial countries and on EMEs simultaneously. For each of the 25 developing countries in the database there are 18 financial partners.

Total debt securities, the dependant variable, indicates the flow of portfolio investment between EMEs and industrial countries. It is the total number of public or private corporation or government agency bonds issued by developing countries and purchased by a given investor[47] resident[48] in one of the 18 developed countries. This variable includes both short-term (original maturity of over one year) and long term (original maturity of one year or less) debt securities.

Alongside the dependent variable, the main interest is on fiscal series. Two fiscal variables, fiscal deficit in both EMEs and advanced economies and public debt for both set of countries, will be used in the estimations.

For *Fiscal deficit in industrial countries*, the overall deficit is used. In this analysis, this measure seems to be more suitable, since for instance the use of structural deficit would be irrelevant. Indeed if the structural deficit was used, one would purge the effects of cyclical situation of the real economy on the public budget. Statistics on this budget deficit (in percent of GDP) is presented in Table 3.1. During the period from 2001 to 2007, fiscal deficit seems reasonable (compared to the situation after the onset of the financial crisis in the autumn of 2008), with the notable exception of Japan, which had a deficit of 8% of GDP in 2002 and 2003 (Fig A.3.6). The definition is identical for fiscal deficit in EMEs.

The weak performances in terms of output growth especially in 2003 for some countries confirm what was said earlier in this chapter concerning low global interest rates and capital inflow in developing countries. Indeed in 2003, Germany, Italy and Switzerland run poor growth performance (Ragacs & Schneider, 2007)[49].

[47] The holder of a security may be a government entity, a public or private corporation (including a financial institution), a quasi-corporation (including a financial institution), an enterprise as defined in SNA, a nonprofit institution serving households (NPISH), or an individual.

[48] For the CPIS, the residence of individuals that hold securities is established by their center of economic interest, as interpreted by the 1993 SNA. This is determined by the location of their principal residence (as a member of a household) or by their employment status. An individual who is employed for one year or more in a country is deemed to be resident in that country.

[49] This underperformance was due to cyclical effects such as increase in unemployment while investment and exports stagnated and a restrictive fiscal policy (Ragacs & Schneider 2007).

Returns on treasury papers in advanced economies remained relatively stable during this period, only Japan did run yields lower than 2 percent during the whole period.

Government debt shows important disparities among industrial countries, if we consider European Monetary Union member countries for which the Stability and Growth Pact can be used as a benchmark. Indeed only Italy and Belgium have remained above the limit for public debt of 60 percent of GDP all throughout the period. France and Germany (and other countries) managed quite well their level of debt until 2005 when they slightly reached the 60% limit (Fig A.3.7).

The early 2000s saw good economic performance for major EMEs. However, the weak output growth performance between 2000 and 2002 was due to the crisis for some developing countries (e.g. Argentina, Turkey, and Singapore).

The indebtedness of developing countries is captured in the variable *"external debt"*. *External debt*, as it indicates, is the total outstanding debt other than bonds owed by the public sector to non-resident creditors. This variable, alongside the fiscal deficit, captures the dynamic of past behaviour of the public sector. The highest level of debt was for Argentina (as well as Uruguay and Lebanon) between 2002 and 2005 probably a consequence of the late 1990s' financial crisis. A higher level of public debt might be considered by investors as an indicator of future fiscal turmoil and therefore lowers the confidence on repayment capabilities.

Summary statistics on *Stock market index* clearly demonstrates that investing in developing countries has been highly profitable. Table 3.2 details the statistics on other relevant variables.

Later in this chapter, one will investigate if the industrial countries' *government net debt* has the same impact on capital flows as budget deficit. The matter will be to determine the impact of the "stock of deficit" on portfolio investment abroad.

Table 3.1: Descriptive Statistics for Industrial Countries

	FISCAL_DEFICIT	CURRENT_ACCOUNT	GDP	GDP_GROWTH	GOV_DEBT	GOV. BOND YIELD
Mean	-0.002351	0.024699	1623.501	2.525058	0.598006	4.200928
Median	0.001253	0.021119	440.4587	2.502810	0.549490	4.291273
Maximum	0.080327	0.172325	13807.55	6.579860	1.916415	6.327500
Minimum	-0.184824	-0.100794	20.21628	-0.217425	0.060525	1.011667
Std. Dev.	0.042598	0.058634	2736.973	1.422092	0.374929	1.032172
Sum	-0.296280	3.112042	204561.2	318.1574	75.34870	529.3169
Sum Sq. Dev.	0.226828	0.429746	9.36E+08	252.7932	17.57145	133.1723
Observations	126	126	126	126	126	126

Table 3.2: Descriptive Statistics for EMEs

	STOCK_INDEX	OVERALL_DEFICIT_GDP	OVERALL_DEFICIT2	GOV_EXPEN_GDP	GDP_GROWTH	EXTERNAL_DEBT_GDP	CURR_ACCOUNT_GDP	CREDIT_SWAP
Mean	11521.27	0.023484	3.886170	0.295254	3.956872	0.389131	0.012644	136.9722
Median	8113.430	0.020982	2.722493	0.292416	4.115649	0.358751	0.003332	70.00000
Maximum	63465.54	0.212470	56.79870	0.519237	16.23571	1.420028	0.259092	613.3000
Minimum	295.3900	-0.090518	-87.76098	0.006698	-11.76508	0.000000	-0.193426	6.700000
Std. Dev.	14491.75	0.049609	17.30833	0.109493	3.913747	0.287610	0.070549	144.4032
Sum	322595.5	4.109613	680.0798	51.66938	692.4526	68.09786	2.212720	10820.80
Observations	28	175	175	175	175	175	175	79

3.4.4.3 Estimations

$$\ln(bond_{ijt}) = \alpha + \beta_1 EME_{jt} + \beta_2 Indust_{it} + \delta Gravity_{ijt} + \varepsilon_{ijt}$$

Where i denotes the source country of capital and j the host country (the bond seller) and t the time going from 2001 to 2007[50].

α represents the vector of fixed effects. In this analysis, I will be using host country fixed effects and bilateral fixed effects, i.e. the common fixed effects between source and destination countries. The results presented are those obtained with bilateral fixed effects. EME_{jt} is the vector of host country specific explanatory variables and $Indust_{it}$ the source country specific explanatory variables. $Gravity_{ijt}$ is the vector of gravity variables which are variables of control, common to emerging and industrial countries. In our estimations I include a dummy for common language and the logarithm of the distance between countries. However I expect these variables not to be statistically significant as is the case for trade in physical goods; here the transfers are mainly immaterial. ε_{ijt} is the error term which is assumed to be independently and identically distributed (Eichengreen & Luengnaruemitchai, 2006).

The full set of variables and some elements of descriptive statistics are presented in the Annexes.

[50] This period was chosen because the CPIS database runs from 2001 to 2007.

3.5 The Baseline Results

3.5.1 The effect of fiscal Deficit

The period of estimation runs from 2001 to 2007. The database includes 25 emerging countries and each country has 18 financial partners (industrial countries). Therefore, the total number of observations will be equal to 3150 observations.

Presented below are the results with both bilateral fixed effects and industrial countries fixed effects. It can be observed that estimations using industrial countries' fixed effects (excluding the other common elements between industrial countries and EMEs) give less robust results due probably to the exclusion of some information when one controls for fixed effects only for a set of countries.

On our first set of estimations, I run regressions for the same set of variables using Industrial fixed effects and bilateral fixed effects. Table 3.3 presents the result from a pooled OLS estimation, which shows a good behaviour of gravity variables and country sizes. From column 1, one can notice that distance between countries enters negatively consistent with the information-cost hypothesis. However, the language dummy does not appear to be determinant in bond issuing and purchasing, since "English" has become the main communication tool in financial markets. Once the bilateral fixed effects are considered, of course, we are obliged to drop country pair variables that do not vary over time. Therefore Table 3.3 column-2 confirms that both deficits impact negatively on portfolio capital flows to EMEs with quite a large coefficient.

As said earlier, considering only source country's fixed effects induces a loss of information due to the fact conditions in both countries are relevant for investors. Therefore, when other control variables are introduced, the model (with Indus FE only) becomes less robust due to some loss of degree of freedom.

Table 3.3: The Effects of Fiscal Deficit in Industrial Countries

VARIABLES	(1) **Indus FE**[51]	(2) **Bilateral FE**	(3) **Indus FE**	(4) **Bilateral FE**
overall_deficit_gdp	-3.209***	-4.340***	-1.276	-3.141***
	(1.046)	(0.635)	(1.056)	(0.624)
overall_deficit2_gdp	-4.119***	-5.725***	-4.452***	-3.416***
	(0.394)	(0.446)	(0.419)	(0.493)
Distance	-0.623***		-0.686***	
	(0.0526)		(0.0536)	
Language	0.0917		0.0653	
	(0.0643)		(0.0634)	
GDP_growth			0.178***	0.146***
			(0.0213)	(0.0127)
gdp_growth_2			0.0311***	0.00630*
			(0.00530)	(0.00348)
Constant	1.467***	-0.831***	1.394***	-1.265***
	(0.201)	(0.0137)	(0.216)	(0.0381)
Observations	2482	2482	2482	2482
R-squared	0.079	0.108	0.110	0.169
Number of indus_id	18		18	
Number of bilateral_id		419		419

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[51] Indus FE= industrial countries fixed effects. Bilateral FE= fixed effects for both industrial and EMEs.

When one takes into consideration, in the estimations, the country's size and economic dynamism approximated by GDP growth, the results show that economic growth (or "economic health") in industrial countries seems to be more important (Table 3.3 Column-4). Indeed the GDP growth for advanced economies comes with a positive and strongly significant coefficient as is the case for growth in EMEs with a coefficient statistically significant at only 10%. Fiscal deficit for developed countries still impacts negatively on capital flows to EMEs.

Up to this point, the results have confirmed the importance of "push factors" since both economic growth and fiscal stances in industrial countries remain important determinants for capital flows (more than GDP growth for EMEs).

Fiscal deficits in both industrial and emerging countries have a negative and statistically significant effect on debt securities. These coefficients remain stable in all our estimations especially for the fiscal deficit of advanced economies. When one controls for other effects, western countries' fiscal variables remain significant while those of developing countries lose their significance. For instance, when the external debt level of developing countries is considered, their fiscal deficit and debt still influence bonds trade. But as soon as the stock market index is considered, EMEs fiscal balance is no more relevant. The main assumption underlying this statement is the fact that, developing countries follow the business cycles of western countries (Agénor & Dermott, 2000). However it seems, according to the recent developments in the international financial market, that there is a new paradigm. Indeed, how could we interpret that capital flows to EMEs have resumed (from late 2009) despite huge debt needs in some developed countries such as those part of the Euro area? This question will be addressed further in this paper. The credit default swap (CDS) also has a negative effect on bond purchasing and EMEs fiscal deficit losses its significance.

The output growth, Table 3.4 column-1 & column-2, captures the general state of the economy; confirms the hypothesis that the strongest positive effect on capital flow is exerted by the GDP growth in industrial countries (consistent with Frankel & Roubini 2001).

Table 3.4: The Effects of Fiscal Deficit in Industrial Countries

VARIABLES	(1) **Bilateral FE**	(2) **Bilateral FE**	(3) **Bilateral FE**
overall_deficit_gdp	-3.352***	-3.543***	-2.572**
	(0.745)	(0.746)	(1.030)
overall_deficit2_gdp	-2.756***	-2.561***	1.051
	(0.556)	(0.557)	(0.838)
Distance			
Language Dummy			
GDP_growth	0.145***	0.163***	0.00647
	(0.0149)	(0.0153)	(0.0241)
gdp_growth_2	0.00480	0.00468	
	(0.00381)	(0.00379)	
external_debt_2_gdp	-0.243**	-0.195*	-0.177
	(0.109)	(0.111)	(0.119)
current_acc_indus_gdp		-3.237***	-0.273
		(0.682)	(0.924)
curr_account_2_gdp		0.187	
		(0.441)	
govt_bond_yield			-0.137***
			(0.0416)
log_stock_index_eme			0.270***
			(0.0876)
Constant	-1.216***	-1.218***	-1.072**
	(0.0686)	(0.0682)	(0.425)
Observations	2044	2044	419
R-squared	0.164	0.175	0.189
Number of bilateral_id	349	349	71

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.5: The Effects of Fiscal Deficit in Industrial Countries

VARIABLES	(1) log_debt_security_2	(2) log_debt_security_2
overall_deficit_gdp	-5.689***	-2.317**
	(1.246)	(1.048)
overall_deficit2_gdp	-1.205	0.282
	(1.039)	(1.027)
Distance		
Language		
GDP_growth	0.0206	0.00264
	(0.0229)	(0.0243)
gdp_growth_2	0.00668	-0.00909
	(0.00939)	(0.00703)
external_debt_2_gdp	-0.0392	-0.153
	(0.202)	(0.121)
current_acc_indus_gdp	-3.336***	-0.179
	(1.080)	(0.926)
curr_account_2_gdp	-0.552	
	(0.620)	
govt_bond_yield	-0.00300	-0.138***
	(0.0410)	(0.0416)
a5_year_cds	-0.000855**	
	(0.000397)	
log_stock_index_eme		0.324***
		(0.0971)
Constant	-0.664***	-1.238***
	(0.164)	(0.444)
Observations	960	419
R-squared	0.101	0.193
Number of bilateral_id	282	71

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Indeed during good times in Western countries, investors are more confident and developing countries receive more capital flows.

When I consider now the level of external debt (Table 3.4, column-1), the results are consistent with those of Baldacci & al. 2008. The higher the external debt (in percent of GDP), the less attractive the bonds of developing economies, since the risk of default or debt rescheduling increases.

The current account deficit in source countries comes with a negative sign as expected. Since capital outflow in industrial countries improve the current account balance.

The results also confirm the high importance of "push factors" for capital inflows to EMEs. A high level of stock market index in EMEs (Table 3.4 column-3) encourages capital inflow motivated by return from investments. But when the rate of return is higher in industrial countries (government bond yield on Table 3.4 column-3) investments in developing countries diminish, as investors prefer source country bonds.

The interesting thing is that when some control variables are introduced in the estimations, the fiscal deficit and the output growth in EMEs are no longer significant. Actually this highlights the fact that the decision to purchase bonds issued by EMEs is made (almost) solely based on the relative profitability of this investment. When the stock market index and government bond yields are considered, EMEs variables become less important in explaining capital flows (Table 3.4 Column-3). The level of risk on EMEs bonds (approximated by the 5-year Credit Default Swap (CDS), as expected, has a negative impact on portfolio investment in developing economies (Table 3.5 Column-1). Moreover when the 5-year CDS is introduced, the negative impact of fiscal deficit in industrial countries is greater and all other control variables (such as GDP growth in both sets of countries) become statistically insignificant. Thus, this confirms the assumption that large deficits in advanced countries always cause financial risks to increase in developing countries.

Summing up all the previous findings, one can reasonably say that the effect of fiscal deficit in industrial countries on capital flows to EMEs is strongly negative. Table A.3.8

presents in greater detail, this impact on each developing country if you choose a marginal impact of 4 and 9[52].

In the following section, the investigation will answer the question of whether the stock of debt in advanced economies has the same impact as their fiscal deficit on portfolio investment.

3.5.2 The effects of Public Debt

Following the previous analysis, we estimate here the effect of industrial countries' government debt on bond purchases. This will allow us to see whether investors are also sensitive to the stock of public deficit. Indeed, if capital owners adjust their investment according to the level of debt, this would mean that they assess the sustainability of the source country's current fiscal policy. Once this policy is considered unsustainable[53] (meaning that if the government keeps pursuing the current policy they will not be able to repay the debt and a restrictive fiscal policy will be unavoidable), portfolio investments are reduced or capital is withdrawn from developing countries since a worsening of the situation is expected (countercyclicality argument). This is simply due to the argument developed earlier that when governments of western countries have higher capital needs this creates a crowding-out effect in developing economies.

[52] Indicative marginal effects.

[53] Several methods allow assessing the sustainability of the fiscal policy among which one can cite the Solvency Condition. The solvency condition states that the public sector is solvent if the present discounted value of government current and future spending is at least equal or lower than the present discounted value of government current and future path income net of any initial indebtness. Another method would be to look at the gap between real interest rate and real growth rate, if the latter is greater public debt therefore needs to be stabilized.

3.5.2.1 The Results

Table 3.6 presents the results from both the invariable characteristics and bilateral fixed effects of industrial countries. The first fact that comes out of these sets of estimation is that advanced countries' government debt is statistically significant only when Bilateral fixed effects are used. Therefore, even if both results are presented, the focus will be on outcomes from estimations using bilateral fixed effects.

Table-3.6 Column-1 shows roughly the main results when only industrial countries' fixed effects are considered. Compared to Column-2, the results are similar except for the variable of interest (government debt). First the gravity variables, distance and language dummy, behave quite well with distance between countries impacting negatively on capital flows (same as in previous results). Higher government net debt, therefore higher borrowing needs, crowds out portfolio investment in developing countries. Developing countries' external debt, as previously indicated and consistent with Baldacci & al. 2008, still discourage capital inflows.

Since the stock of debt is considered as an indicator of the sustainability of the fiscal policies of industrial countries, it becomes reasonable for "push factors" to be more visible. Indeed when there is any risk in investing in EMEs (due to fiscal turmoil in advanced economies), all other EME variables might not be relevant for investors while making their decision. For instance, in all estimations, GDP growth in developing economies is not statistically significant (Table-3.6 Column-2).

The remaining tables show a normal sign for current account deficit in industrial countries. Table-3.8 Column-2 underlines an important result consistent with previous findings. Indeed as soon as the level of risk is included, captured by the CDS, one observes a direct outflow of capital without any consideration to the rates of return. This result suggests that even if returns on bonds in industrial countries are low and/or stock market index in EMEs is high, as soon as the level of risk increases capital will flee toward safer shelters in developed economies.

Based on this set of estimations using developed economies' net public debt as a variable of interest, it appears that the effects on capital flows are similar to the effects of fiscal

deficit. This similarity is not surprising since both variables (fiscal deficit and public debt) indicate the wellbeing of the real economy in industrial countries.

The next section will be the place to undertake some robustness check and further investigation.

Table 3.6: Effects of Industrial Countries' government net debt

VARIABLES	(1) **Indus FE**	(2) **Bilateral FE**
log_gov_debt	-0.208	-0.262**
	(0.189)	(0.105)
overall_deficit2_gdp	-3.272***	-2.697***
	(0.564)	(0.567)
Distance	-0.553***	
	(0.0788)	
Language	0.0333	
	(0.0773)	
external_debt_2_gdp	-0.538***	-0.289***
	(0.0928)	(0.110)
GDP_growth	0.163***	0.143***
	(0.0277)	(0.0162)
gdp_growth_2	-0.0314***	0.00195
	(0.00617)	(0.00385)
Constant	1.756***	-0.411
	(0.633)	(0.313)
Observations	1732	1732
R-squared	0.093	0.145
Number of indus_id	15	
Number of bilateral_id		295

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table3.7: Effects of industrial countries' government net debt

VARIABLES	(1) **Indus FE**	(2) **Bilateral FE**
log_gov_debt	-0.226	-0.210**
	(0.191)	(0.105)
overall_deficit2_gdp	-2.492***	-2.538***
	(0.550)	(0.538)
Distance	-0.436***	
	(0.0767)	
Language	0.0175	
	(0.0785)	
external_debt_2_gdp	-0.569***	-0.224**
	(0.0939)	(0.112)
GDP_growth	0.128***	0.160***
	(0.0274)	(0.0161)
current_acc_indus_gdp	-2.105	-3.407***
	(1.287)	(0.717)
curr_account_2_gdp	-0.871**	-0.137
	(0.418)	(0.450)
Constant	1.340**	-0.594*
	(0.635)	(0.313)
Observations	1732	1732
R-squared	0.083	0.158
Number of indus_id	15	
Number of bilateral_id		295

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.8: Effects of industrial countries' government net debt

VARIABLES	(1) **Indus FE**	(2) **Bilateral FE**
log_gov_debt	-0.159	-0.332*
	(0.191)	(0.183)
overall_deficit2_gdp	-2.128***	0.679
	(0.559)	(1.881)
external_debt_2_gdp	-0.557***	-0.400**
	(0.0936)	(0.172)
GDP_growth	0.108***	0.0604**
	(0.0279)	(0.0257)
gdp_growth_2		-0.0438
		(0.0351)
current_acc_indus_gdp	-2.006	0.978
	(1.283)	(1.313)
curr_account_2_gdp	-0.842**	2.752
	(0.416)	(3.521)
govt_bond_yield	-0.165***	-0.0833
	(0.0486)	(0.0555)
stock_index_eme		-5.65e-06
		(3.56e-06)
5_year_cds		-0.000413**
		(0.000181)
distance	-0.430***	
	(0.0765)	
language	7.64e-05	
	(0.0784)	
Constant	1.829***	0.926
	(0.649)	(0.561)
Observations	1732	195
R-squared	0.089	0.127
Number of indus_id	15	
Number of bilateral_id		52

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.6 Further Analysis and some Robustness check

First a robustness check is implemented on the baseline estimation using the Heckman selectivity correction. The results (Table A.3.5) show the countries selected are those with the highest output growth (advanced and emerging economies as well), and EMEs in the sample seem to have better current account positions. Despite these possible biases the results remain strongly similar to the baseline estimation outputs.

3.6.1 Countries with previous default

The last century and the early years of the 21st have seen the debt burden of some countries reaching unsustainable and unaffordable levels. Markets anticipated a default and in most situations this prediction came true due to speculative attacks and higher premiums requested. One can make the hypothesis that not all EMEs face the same level of risk and for some, particularly developing countries in periods of global economic crisis, the effect of fiscal deficit in developed countries is not the same for them. The countries that have defaulted in the past (or recently) might be perceived as more risky than other developing countries. If this argument is relevant, the industrial countries' fiscal deficit combined with the default dummy variable should have an important influence on bonds trade. Therefore to capture this fact, I construct a dummy variable equal to 1 for countries that have defaulted[54] at least once in the past and 0 otherwise, then this variable is introduced multiplicatively with fiscal deficit in advanced countries to see if there is a special treatment for these countries. When introduced (TableA.3.2), this variable becomes non-significant and leaves previous results perfectly stable. It appears that the effect of a fiscal stance in advanced countries is not discriminative with regard to

[54] According to Moody's data base, sovereign default was recorded 12 times in the recent period, from 1983 to 2007. Exactly 11 countries were concerned with Ukraine defaulting during two different periods. These countries are: Venezuela (07/1998), Russia (08/1998), Ukraine (09/1998), Pakistan (07/1999), Ecuador (08/1999), Ukraine (01/2000), Peru (09/2000), Argentina (11/2001), Moldova (06/2002), Uruguay (05/2003), Dominican Republic (04/2005), Belize (12/2006).

a previous sovereign default on external debt; investors award the same level of risk to all countries in our sample.

3.6.2 Episodes of large fiscal deficit in advanced economies

One should distinguish between a normal situation and an episode of "severe" fiscal imbalances. Indeed the results available until now could be qualified as being in line with a general rule but one can ask what should be the case during periods of unusually high deficit? To do so, episodes of large fiscal deficit were defined as periods during which the overall deficit for a country is above the mean plus one standard deviation. We construct a dummy variable to capture this fact (equal to 1 if the deficit is higher than the mean plus one standard deviation). Then, the latter variable is interacted with the fiscal deficit in advanced countries. However the interactive term (fiscal deficit*dummy) is not statistically significant. The reason for this curious result could be that very few observations correspond to this definition of high deficit. Indeed the period 2001-2007 was mainly characterized by fiscal soundness in industrial countries (no major fiscal shock was noticed in the data). But the overall deficit in advanced countries coefficient, still statistically very significant, goes up. Even if the interactive term is not significant, the high coefficient of fiscal deficit shows us that it has a particular impact during episodes of large deficit. This coefficient might suggest that when there is a change in the fiscal policy path, namely a period of severe crisis, (for instance an expansive fiscal policy) the quantity of investments drying out increases.

3.6.3 Testing for non-linear effects and further analysis

Here I will be testing for changes in the effect of industrial countries' fiscal deficit (and debt) on bonds sale. Namely, can "extreme" level of deficit lead to a race toward developing countries' financial assets? A positive answer to this question could be the sign of the birth of a new period.

When I introduce the square of the advanced countries fiscal deficit, this coefficient comes positive and statistically significant. This means that above a certain limit, fiscal deficit in industrial countries reaches a level believed by investors as unsustainable. Therefore for bond holders a sovereign default by developed western government is no longer an unthinkable scenario (TableA.3.4**)**. This would mean that at a certain point, the old rules of fixed income world are being outdated. Indeed, until recently developing countries' debt was viewed as too risky compared for instance to western European assets. A key question one could ask is whether this theoretical result is consistent with the actual situation in the world economy? Indeed the recent fiscal turmoil in the developed world confirms this result in a quite eloquent manner.

After the onset of the financial crisis, in late 2008, one saw a sudden drop in investments in developing countries and capital outflow. According to analysts, (e.g. Kapur & Rakesh 2010) this capital outflow has different determinants from the previous ones. In the past crisis, capital was fleeing from EMEs due to poor sovereign (as well as corporate) solvency. More recently, late 2008, capital outflow was mainly motivated by deleveraging[55] motives (Kapur & Rakesh 2010). One year later the portfolio investment on bonds resumed while fiscal deficits and public debt were at their highest level in advanced countries. Two arguments could explain these facts.

First the quantitative easing policy in major economies (USA, UK)[56] flooded the economy with cheap money. For investors it therefore became possible to arbitrate between cheap money at home (with lower return at home as well) and higher yields abroad especially in EMEs. This is the so called "Carry Trade"[57]. As narrowly defined, the carry trade is the

[55] Deleveraging consists simply of reducing the debt to total assets ratio and thus cleaning one's balance sheet.

[56] The ECB, from late 2008, maintained its interest rates at a low level of 1% in order to ease access to liquidity for banks.

[57] In the early 2000s, the Yen served as fuel for carry traders and recently history repeated itself with the US dollars. For instance the recent world financial crisis, which induced a weaker US dollar and lower interest rate, some investors might find profitable to borrow in dollar and invest in some

practice of borrowing currency from a country where interest rates are low and then lending the proceeds in the currency of a country where interest rates are higher. The goal is to profit from the interest rate differential (Grenville Stephen, 2010). And this was among the determinants in the re-surge of bond investments in developing countries in late 2009. FigA.3.1 shows clearly that after 2008 outflow, capital movement toward developing economies resumed progressively.

The second argument also linked to the previous one is the unprecedented level of public sector deficits and debt in the developed world. In the USA, the debt burden is expected to rise to more than 90% of GDP by 2011, in UK the public debt in 2010 represents 79.1% of GDP (a fiscal deficit more than 12% of GDP)[58], in Spain, Greece and France the public debt is also above 70% of GDP (and fiscal deficit nearly reaching 11% of GDP). On the other hand, for investors Brazilian, Mexican, Chinese, even Russian (that defaulted in 1998) bonds are less risky than Euro Zone ones. The reason for this reversal is that most of middle income economies have strong economies, low budget deficits and current account surpluses[59]. So the fundamentals look much better than in major developed economies such as USA, Japan, UK and in most Euro area countries. Additional to the fiscal turmoil in major developed countries, the growth prospects are also relatively weak (FigA.3.3). Consequently investors believe that nothing in the medium term can be in favour of an improvement of the fiscal stance. The purchases of developing countries' bonds in 2010 (from January to early May) have reached 15.3 billion US dollars and, this inflow has never been seen before. Moreover the EMEs sovereign bond index spreads (compared to US bond yields) have been tightening since October 2008 (based on JPMorgan data, this gap is around 1.48% in 2010 compared to 2.58% in 2005).

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developing economies where one might have double returns. Indeed one gets profit from the exchange rate arbitrage and from the yields difference.

[58] The Institute for Fiscal Studies database, "Debt and Borrowing" data.

[59] This was a great achievement for EMEs since they learnt from previous crises. Therefore more prudential fiscal and monetary policies were implemented during the boom period. After 2007, in the middle of the crisis these countries had enough possibilities to support their economies with fiscal and monetary stimulus packages.

At the same time countries, despite the "safe" Euro shelter, are struggling to have access to private capital in the bond market. Indeed for Greece, Spain, Portugal, perhaps later Ireland and Italy debt restructuring (or default) is not excluded[60].

This situation could mark the start of a new paradigm or at least the end of the one that sees developing countries as fiscally irresponsible, with huge deficits and procyclical fiscal policies. And developed countries being characterized by sound and consistent fiscal policies. Even if it becomes evident that this paradigm has ended or is living its last moments, as soon as data becomes available, further investigation should be done on this issue. Right now, one can only say that the developed world bonds are not the only ones holding the label "safety guaranteed" FigA.3.2.

[60]The first results on the non linear effects were anterior to the crisis in the Euro area. Then the Greek (and Spain?) crisis helped to interpret such results which were incomprehensible before.

3.7 Conclusion

It comes out of this paper that higher fiscal deficit in industrial countries crowds out capital flows to emerging market economies. We showed that if one considers the specific variables for EME and industrial countries and the shared variables as well, the overall deficit in rich countries lowers significantly capital flows to developing countries. While the deficit of developing countries lowers also, but with less intensity, the variable of interest. Indeed in recession periods, governments in advanced economies, by implementing countercyclical policies increase their deficit in order to stabilize the real economy. But in doing so, they compete with developing countries for access to capital. Moreover, investors' confidence falls (due to lower exportation by EMEs), and all of these effects contribute to reducing capital flows.

It was found also that all developing countries share the same level of risk since the fact that the country has defaulted or not is not relevant to investors. Therefore when the CDS level increases it affects almost all countries in the same way.

However these results need to be a bit nuanced, because the (old) paradigm arguing that developing countries' cycles are indefinitely synchronized to those of advanced countries doesn't seem to hold. The recovery path from the 2007 global crisis has shown recently that developing countries are leading the global economic recovery while major countries like USA, UK and Euro zone faced low GDP growth prospects. Also, a non-linear investigation outcome shed light on this issue. Above a certain level of fiscal deficit, considered as unsustainable by investors, the risk of default by a Western country becomes non-negligible; they withdraw their capital from former "safe countries" in favour of emerging economies. The first quarter of 2010 has clearly shown that financial markets were worried about the fiscal stance in advanced countries. And the markets have forced, with higher premiums on sovereign borrowings, governments to tighten their fiscal policy (earlier than predicted) and reduce debt to more reasonable levels. Nevertheless after full recovery, it would be interesting to check whether this result was cyclical or a deeper change.

Before any policy recommendation, one has to notice that EMEs have learnt from their previous experiences during past crises. At the onset of this crisis developing countries were in a good position with current account surpluses, low (or surplus sometimes) fiscal deficit, negligible external debt, and huge foreign reserves; owing to prudent policies. In order to stay as much as possible safe from fiscal (and financial) turmoil in developed countries, financial integration between EMEs should deepen. Trade in goods between developing economies should also increasingly concern finished product so they can stay safe from any crunch in Western economies.

All along this article emerging market and developing countries were employed as synonyms. Obviously any low income country was among the sample used here and, two reasons explain this. First low income countries essentially borrow capital from bilateral or institutional partners, and international bond negotiations are extremely scarce. Second, low income countries due to high levels of debt and poor governance do not have access to capital from the financial market (at least for the bond market), except of course FDI flows.

Despite these relevant results, the database only concerns bonds exchanged in the primary market. In other worlds, after purchasing a developing country's bond, an investor can re-sell it in the secondary market. In this situation, the coefficient estimated could be higher than the actual impact of advanced countries deficit on bond purchases. For instance despite a situation of crisis, a speculator can buy a EMEs bond in the secondary market at a lower price and bets on an increase of its value in the future. On a large scale, trading in the secondary market will be a non-negligible source of funding for developing countries. Even though such data are not available (or not easily accessible), this does not affect our results which focuses mainly on the primary bonds markets.

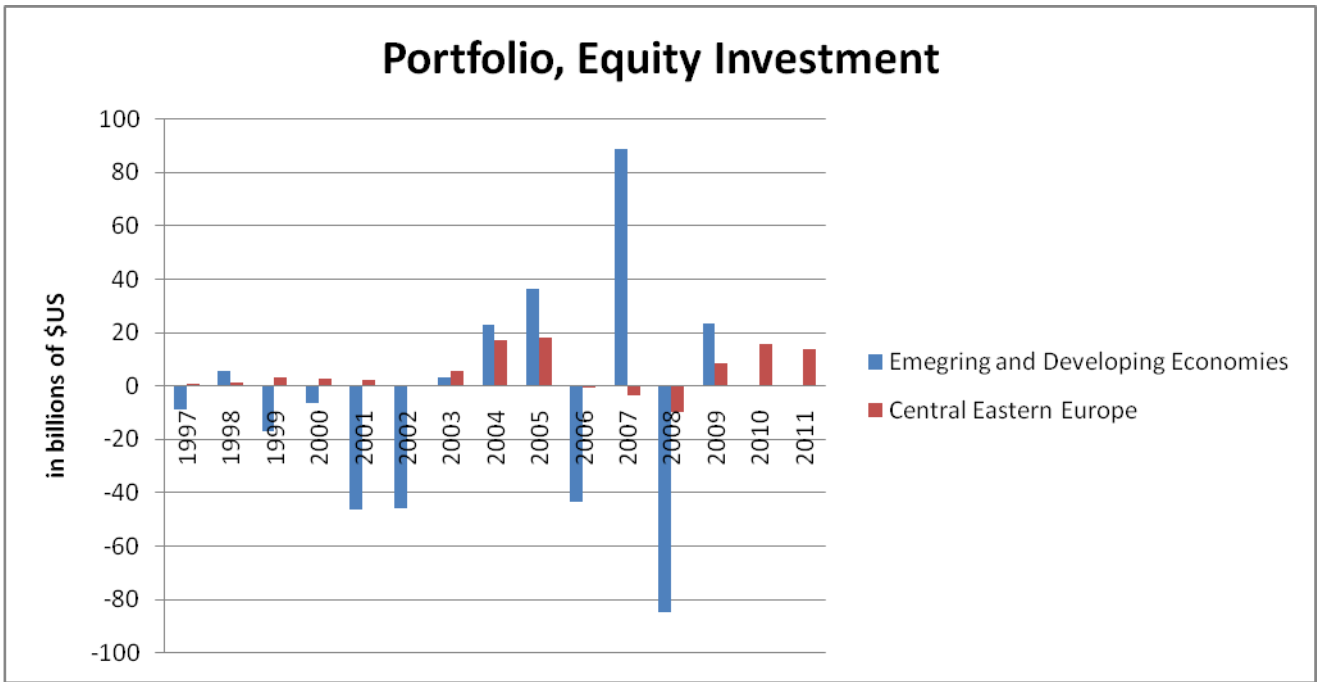
ANNEXES CHAPTER 3

Table A.3.1: Data used gravity estimations: from 2001 to 2007.

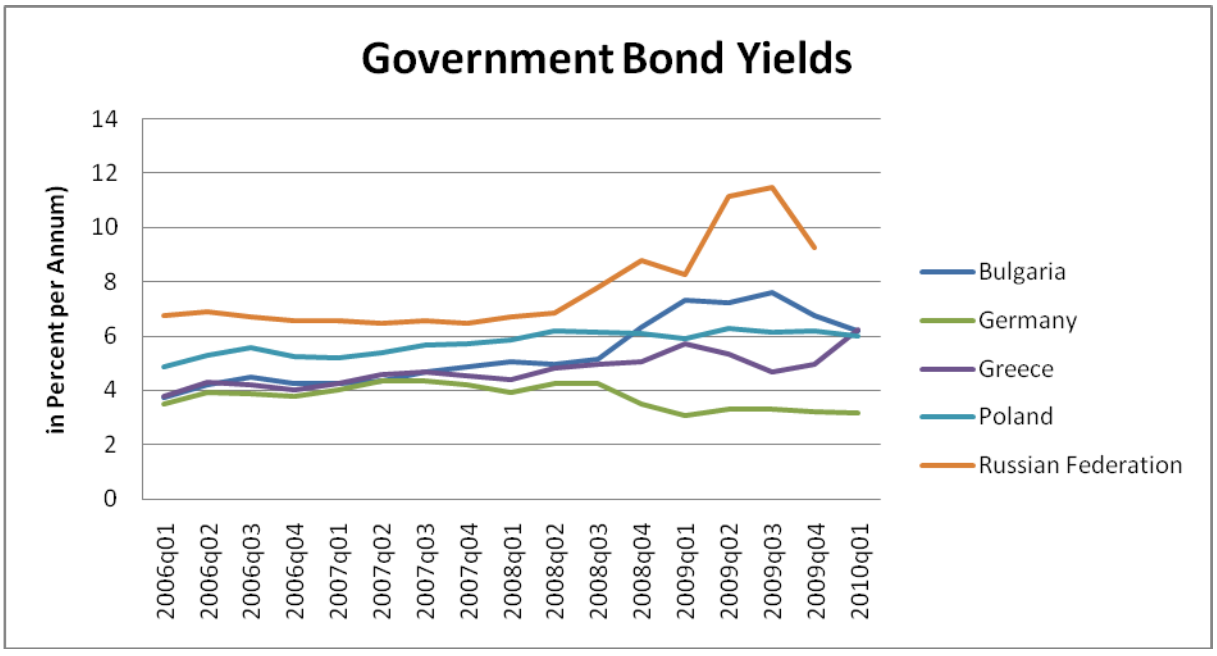
Notation	Definition	Source
Dependent variable: log_debt_securities2	Total debt securities hold by non-resident. (annual frequency)	CPIS database available online at: http://www.imf.org/external/np/sta/pi/datarsl.htm
Overall_deficit_gdp	Overall fiscal deficit for industrial countries over GDP (annual frequency)	World Economic Outlook, 2009.
Overall_deficit2_gdp	Overall fiscal deficit for emerging countries over GDP (annual frequency)	World Economic Outlook, 2009.
Gdp_growth	Real GDP growth for industrial countries. (annual frequency)	World Economic Outlook, 2009.
Gdp_growth_2	Real GDP growth for emerging countries. (annual frequency)	World Economic Outlook, 2009.
Ln_distance	Natural log of distance between capital cities of EMEs and their industrial country partners, (in kilometres).	CPII (French research center in international economics). Data available online at: http://www.cepii.fr/francgraph/bdd/distances.htm
lang	Dummy of common language.	CPII (French research center in international economics). Data available online at: http://www.cepii.fr/francgraph/bdd/distances.htm
external_debt_2_gdp	Total external debt stock over GDP, for emerging countries. (annual frequency)	World Economic Outlook, 2009.
current_acc_indus_gdp	Industrial economies Current account balance (annual frequency) in percent of GDP. Annual data.	International Financial Statistics.
curr_account_eme_gdp	Emerging economies Current account balance (annual frequency) in percent of GDP. Annual data.	International Financial Statistics.
stock_index_eme	Stock market index of emerging countries. (annual frequency)	Global Data Source
govt_bond_yield	5-year emerging government	Datastream. (Credit Market Analysis

	bond yield	database, CMA)
5_year_cds	Sovereign 5-year Credit default swap on emerging market bonds.	Datastream. (Credit Market Analysis database, CMA)
default	Dummy variable= 1 if the country has defaulted in the past, and 0 otherwise.	Moody's Global Credit Research, March 2008.
default_risk	The interaction between the dummy default and the overall deficit in industrial countries	
Large_deficit_dummy	Interactive variable between dummy of large fiscal (mean +1 SD) and the overall deficit in industrial countries in percent of GDP.	

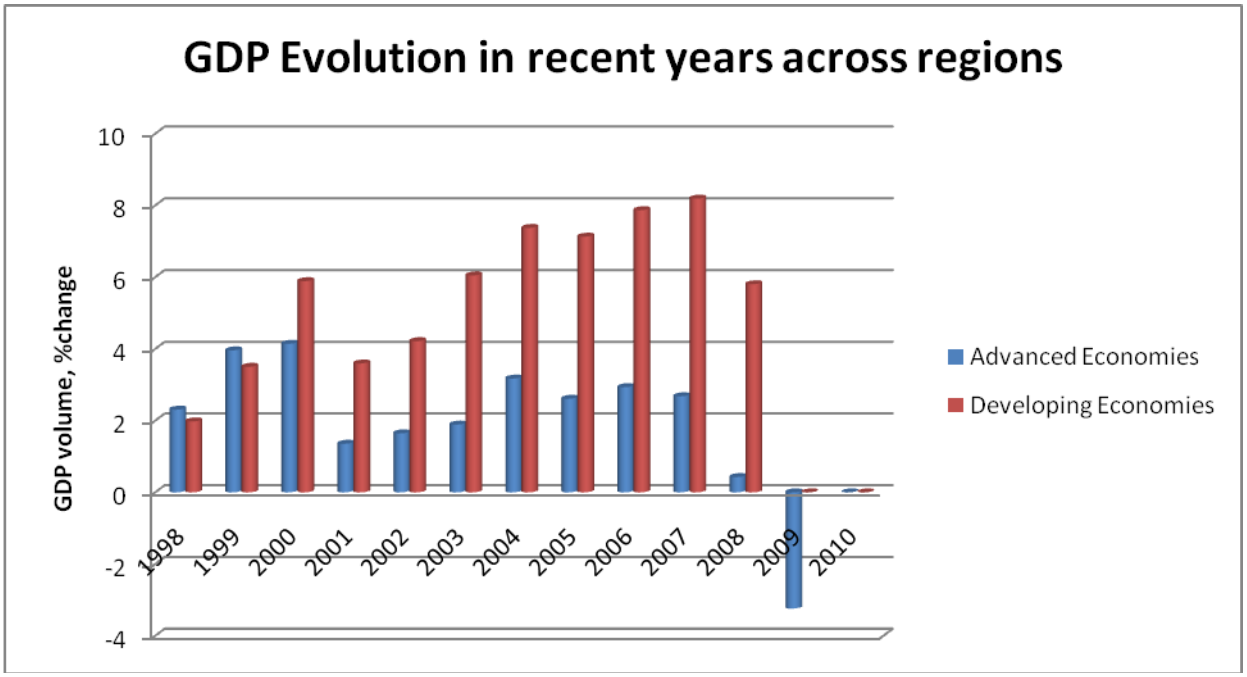
FigA.3.1: Portfolio, Equity Investment evolution: Prospects after the financial Crisis.



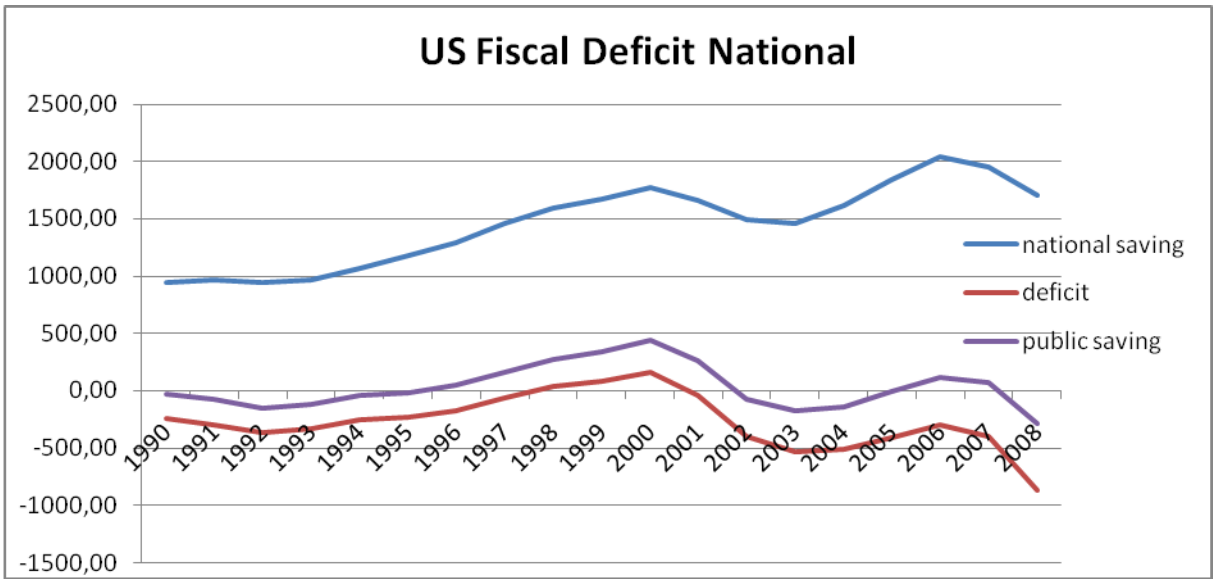
FigA.3.2: Government Bond Yields comparison across countries



FigA.3.3: GDP Evolution across countries in recent period.



FigA.3.4: Evolution of public and private saving in the USA compared to fiscal deficit.



In billions USD

Fig A.3.5: LIBOR as Global Interest Rates

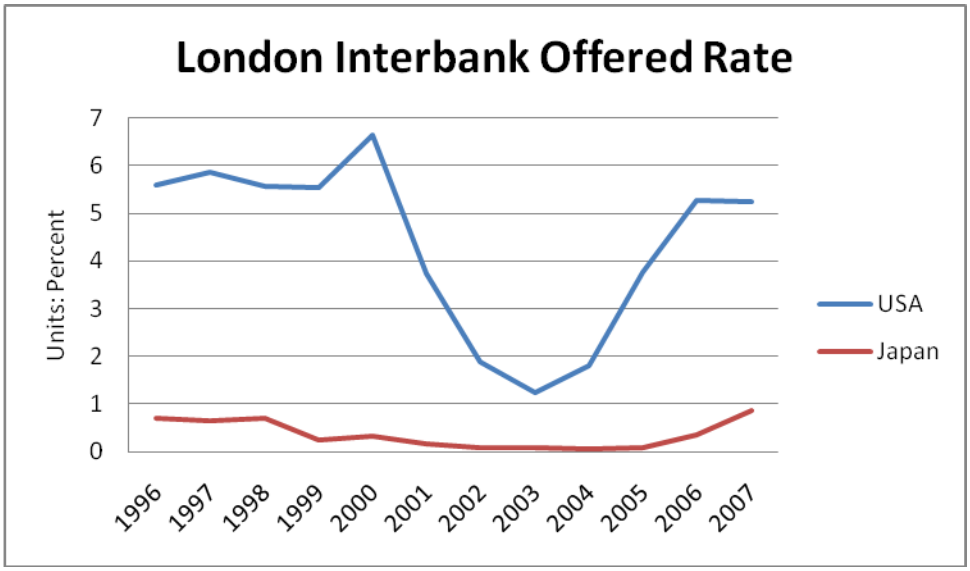


Fig A.3.6: Budget Deficit in Industrial Countries

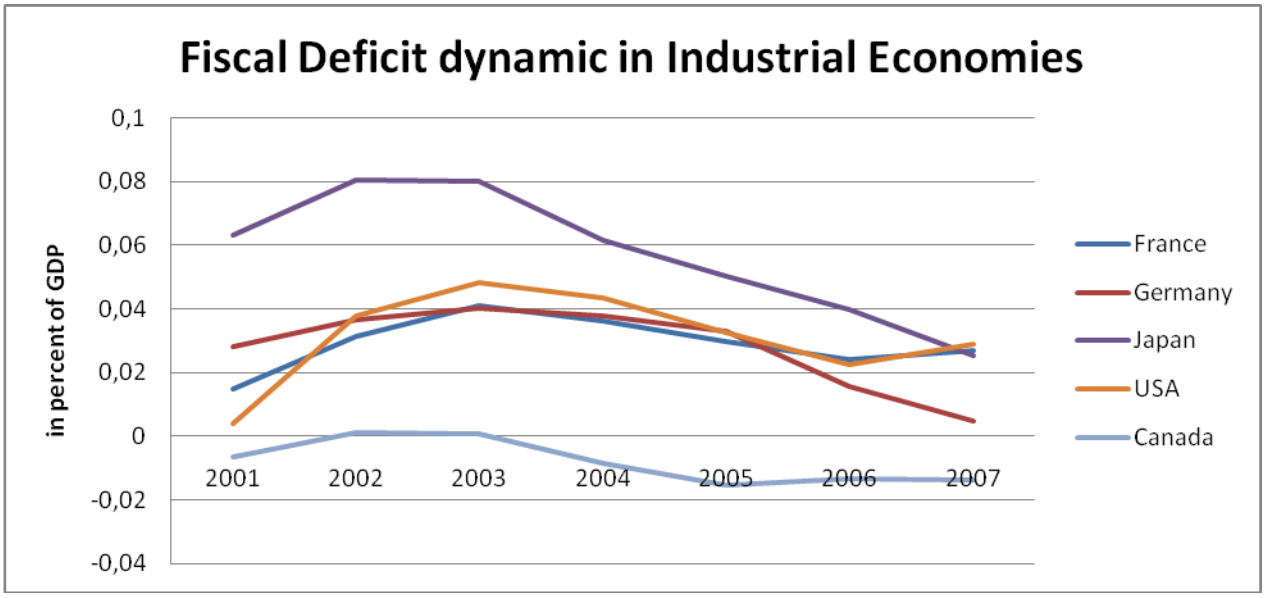
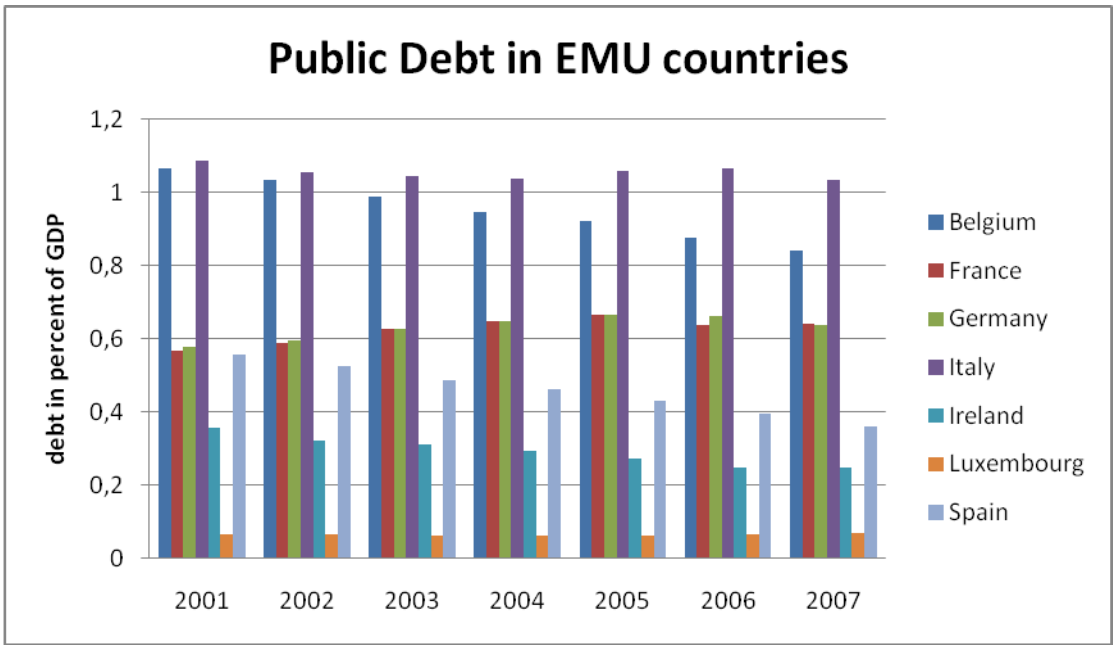
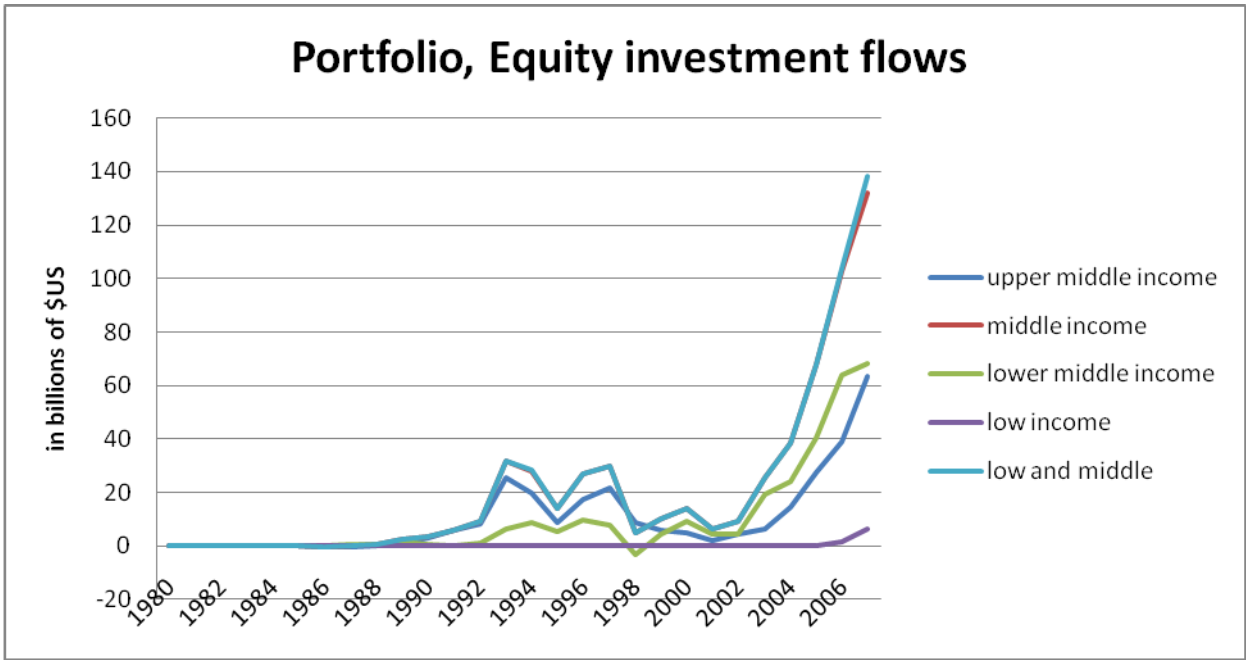


Fig A.3.7: Government Debt Budget Deficit in Industrial Countries



FigA.3.8: Portfolio Investment per income level



TableA.3.2: Effect of Default history

VARIABLES	(1) log_debt_security_2	(2) log_debt_security_2
overall_deficit_gdp	-3.666*	-4.951***
	(2.046)	(1.269)
overall_deficit2_gdp	-1.867**	-1.646
	(0.809)	(1.028)
default_risk	2.220*	1.200
	(1.279)	(2.155)
Distance	-0.748***	
	(0.0859)	
Language	0.112	
	(0.107)	
GDP_growth	0.0494	0.0224
	(0.0480)	(0.0231)
gdp_growth_2	-0.0300**	0.00133
	(0.0127)	(0.00938)
external_debt_2_gdp	0.0106	-0.140
	(0.182)	(0.197)
govt_bond_yield	0.0493	0.0254
	(0.0800)	(0.0405)
a5_year_cds	0.000612***	-0.000298**
	(0.000199)	(0.000145)
Constant	1.857***	-0.784***
	(0.446)	(0.160)
Observations	960	960
R-squared	0.084	0.086
Number of indus_id	18	
Number of bilateral_id		282

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TableA.3.3: Large deficit episodes

VARIABLES	(1) log_debt_security_2	(2) log_debt_security_2
overall_deficit_gdp	-3.102	-4.665***
	(2.119)	(1.175)
overall_deficit2_gdp	-1.810**	-1.743*
	(0.809)	(1.016)
large_deficit	0.00198	0.00349
	(0.122)	(0.0583)
log_dist	-0.735***	
	(0.0857)	
lang	0.110	
	(0.107)	
GDP_growth	0.0502	0.0220
	(0.0480)	(0.0231)
gdp_growth_2	-0.0287**	0.00217
	(0.0127)	(0.00926)
external_debt_2_gdp	0.0169	-0.120
	(0.183)	(0.194)
govt_bond_yield	0.0482	0.0247
	(0.0802)	(0.0407)
a5_year_cds	0.000596***	-0.000312**
	(0.000199)	(0.000143)
Constant	1.800***	-0.789***
	(0.446)	(0.160)
Observations	960	960
R-squared	0.081	0.086
Number of indus_id	18	
Number of bilateral_id		282

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.3.4: Test for non-linear effect of Fiscal deficit in advanced economies

VARIABLES	(1) log_debt_security_2
overall_deficit_gdp	-9.781***
	(1.764)
overall_deficit_gdp^2	3.199*
	(1.787)
curr_account_2_gdp	0.696
	(0.908)
overall_deficit2_gdp	-13.25***
	(1.036)
Constant	-1.933***
	(0.0418)
Observations	2482
Number of bilateral_id	419
R-squared	0.104

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TableA.3.5: Heckman Selectivity Bias Correction

VARIABLES	(1) log_debt_security_2	(2) select	(3) mills
overall_deficit_gdp	-7.957***		
	(0.821)		
overall_deficit2_gdp	-3.908***		
	(0.730)		
log_dist	-0.455***		
	(0.0916)		
lang	0.305***		
	(0.0902)		
GDP_growth	0.247***	0.130***	
	(0.0516)	(0.0120)	
gdp_growth_2	0.0130	0.0390***	
	(0.0170)	(0.00604)	
external_debt_2_gdp	-0.676***		
	(0.115)		
govt_bond_yield	-0.0823***		
	(0.0292)		
current_acc_indus_gdp		-0.136	
		(0.408)	
curr_account_2_gdp		1.844***	
		(0.425)	
lambda			1.764**
			(0.685)
Constant	-0.219		
	(0.675)		
Observations	2712	2712	2712

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.3.6: List of Countries

EME	Industrial countries (partners)
Argentina	Australia
Brazil	Austria
Chile	Belgium
Colombia	Canada
Czech Republic	Danmark
Egypt	Finland
Hungary	France
India	Germany
Indonesia	Ireland
Kazakhstan	Italy
Korea, Republic of	Japan
Lebanon	Luxembourg
Malaysia	Norway
Mexico	Spain
Pakistan	Sweden
Philippines	Switzerland
Poland	United Kingdom
Russia	USA
Singapore	
South Africa	
Thailand	
Turkey	
Ukraine	
Uruguay	
Venezuela, Rep. Bol.	

Table A.3.7 **Annual Total Debt Securities**

in billions of $US

Emerging Market Economies	2001	2002	2003	2004	2005	2006	2007
Argentina	20,2135988	12,0512427	14,84813265	22,6440529	21,2626126	28,8482692	23,9535992
Brazil	32,7932791	29,8009002	42,71421017	45,7438385	45,5502463	47,7849384	47,9262259
Chile	4,67804861	5,91763623	8,690728487	10,486016	10,3301313	10,0184015	9,0398209
Colombia	5,18280576	4,11041208	5,390877776	7,06159237	6,82273528	9,74549021	10,5626153
Czech Republic	0,92430026	1,25391389	2,032604968	6,57370386	8,07199177	9,66907489	11,8639581
Egypt	0,46679471	0,23032024	0,13341374	0,18623668	2,99768638	10,4448504	5,31190793
Hungary	11,283218	15,1779654	18,40544181	29,7169284	27,5098044	38,299947	45,2127409
India	1,3319923	0,63425535	0,668670887	3,02790024	6,34323942	10,7855952	7,81571885
Indonesia	0,82617379	0,93595812	1,542644613	1,89686839	4,77054361	7,01849582	7,65399782
Kazakhstan	0,2667178	0,1633899	0,207881489	1,09926246	1,9386824	5,46151842	1,60718684
Korea, Republic of	17,7355249	18,8592426	13,28675823	24,5129483	29,9682833	35,763395	54,1942114
Lebanon	0,33659113	0,12253173	0,159760991	0,92050429	0,66960265	1,35266114	0,88868932
Malaysia	5,54978873	6,37355149	8,899041378	11,9517866	13,3146288	14,9779449	18,1560648
Mexico	38,944225	39,7929232	43,61005904	47,3749417	53,7457806	50,3328553	46,5778904
Pakistan	0,17448557	0,09805692	0,060597489	0,15917301	0,09497859	0,73021496	0,87684137
Philippines	6,45401654	6,57093926	9,942804167	10,4036327	14,242407	17,2146028	17,0417561
Poland	5,89158171	10,1697224	16,69905114	32,069651	44,0658511	49,418353	54,6720256
Russia	13,6208786	16,1344907	18,79732069	23,7795795	19,0493735	34,5359609	31,5836017
Singapore	11,203308	6,52799134	7,96613773	12,4757594	18,9958937	22,7165174	26,7246961
South Africa	6,14303513	6,62794806	11,21277915	13,9824335	15,9617414	15,7689611	17,6594652
Thailand	2,27413414	1,76825638	2,213316781	2,60040958	3,05269723	4,09866741	2,12823758
Turkey	11,1418409	10,0973892	10,73380633	14,3559091	20,1839554	33,4275956	32,0236165
Ukraine	0,8547097	1,29769033	1,902753075	3,51472488	3,02053825	7,74125878	7,63898009
Uruguay	1,24649995	0,96204917	1,30307472	2,27884269	2,73898858	4,12152239	4,93149874
Venezuela, Rep. Bol.	7,91576386	8,48390624	8,650560528	13,0087742	17,3090399	13,9073518	12,7286546

Table A.3.8: Indicative values of Marginal effects of Fiscal deficit in industrial countries on portfolio investment

Emerging Market Economies	Mean	4%	9%
	20,5459297	0,82183719	1,84913367
Argentina	41,7590912	1,67036365	3,75831821
Brazil	8,45154043	0,33806162	0,76063864
Chile	6,98236125	0,27929445	0,62841251
Colombia	5,76993539	0,23079742	0,51929419
Czech Republic	2,82445858	0,11297834	0,25420127
Egypt	26,5151494	1,06060598	2,38636345
Hungary	4,37248175	0,17489927	0,39352336
India	3,52066888	0,14082676	0,3168602
Indonesia	1,53494847	0,06139794	0,13814536
Kazakhstan	27,760052	1,11040208	2,49840468
Korea, Republic of	0,63576304	0,02543052	0,05721867
Lebanon	11,3175438	0,45270175	1,01857894
Malaysia	45,7683822	1,83073529	4,1191544
Mexico	0,31347827	0,01253913	0,02821304
Pakistan	11,6957369	0,46782948	1,05261632
Philippines	30,4266051	1,21706421	2,73839446
Poland	22,5001722	0,90000689	2,0250155
Russia	15,2300434	0,60920174	1,37070391
Singapore	12,4794805	0,49917922	1,12315325
South Africa	2,59081701	0,10363268	0,23317353
Thailand	18,8520162	0,75408065	1,69668146
Turkey	3,71009359	0,14840374	0,33390842
Ukraine	2,51178232	0,10047129	0,22606041
Uruguay	11,7148644	0,46859458	1,0543378
Venezuela, Rep. Bol.			

Note: This table presents the mean of yearly value of total debt securities from 2001 to 2007. The 4% (9%) column represents the effect of a 4% (9%) increase in overall fiscal deficit in industrial countries.

Chapter 4: Fiscal Policy for Stabilization in Developing Countries: A Comparative Approach

4.1 Introduction

The issue of efficiency of macroeconomic policies on short term economic activity has remained an unsolved question where several theories give different predications. A first set of studies has tried to define the nature of and how policy makers were using macroeconomic policies to influence the real economy. These studies reveal that OECD countries (advanced economies in general) run countercyclical fiscal policies and developing countries implement procyclical policies (details on this literature are given later). Countercyclical fiscal policies consist in increasing budget deficit (or increasing spending and/or reducing tax rates) when the difference between the potential output and the current output decreases or even becomes negative. On the contrary, with procyclical measures the government simply increases its deficit in good times (positive output gap) and consolidates it in periods of recession. Despite these results one can wonder if macroeconomic fluctuations are bad for economic activity and what is the rationale behind the intervention of public authorities against these fluctuations.

The real business cycle theory argues that business cycles can be interpreted as the economy's optimal response to shocks, at least in first-order approximation. While some inefficiencies and distortions may be present in the economy, they are not viewed as central to cyclical phenomena. Most importantly, efforts of public authorities at stabilization may be counterproductive, and could even reduce welfare, since these interventions might keep on track inefficient and expensive firms. Indeed recession helps to correct organizational inefficiencies and encourage firms to reorganize, innovate or relocate to new markets (Aghion & al. 2005). Another view similar to the neoclassical one defends the idea that macroeconomic policy should primarily focus on price and income stability since long-run economic growth depends only on structural characteristics such as quality of institutions (Easterly 2005, Acemoglu & al. 2003). Therefore, and according to these theories, even in a period of recession the government should not intervene and stabilizing policies should remain at their lowest level possible. However for firms willing and able to improve their efficiency, the main barrier will be access to funds in periods of economic downturn since their profits are sliced. Therefore without an "external intervention", even good firms will be ejected from the market and this might delay any

recovery. To avoid these negative effects a government could increase public investment or its spending and thereby foster national demand. Another possible answer from public authorities could be to directly subsidize enterprises by supporting them in their R&D expenses.

Moreover, according to Keynesians, recessions are considered as periods where the use and the allocation of productive resources are inefficiently low. In a recent work, Galí & al. 2005 identify the presence of large efficiency gaps in recession periods which are associated with a declining aggregate efficiency. They develop a simple analytical framework that justifies the pursuance of countercyclical fiscal policies in order to overcome the inefficiencies associated with recessions (see infra). Finally, bailing out the economy during bad times is sometimes almost compulsory for public authorities when the country faces a systemic hazard. For instance, in economic crises like the recent one in 2010, without public intervention, major firms (General Motors in USA, Northern Rock in UK etc.) could fail and leave thousands of workers unemployed and many households losing their life-time savings. By bailing out such "too big to fail" firms, public authorities preserve their economy from a general collapse with unpredictable social consequences. This sheds some light on why fiscal policies should be a stabilizing tool and used by both advanced and developing countries.

Also recent studies have shown that countercyclical public debt policy is highly growth-enhancing (e.g. Aghion & Marinescu 2005). Therefore, even though the level of institutional development matters, this does not exclude that cyclicality of fiscal policy plays an important role for GDP growth.

In this chapter the contribution is twofold. Until recently, studies on the cyclicality of fiscal policies in developing countries did consider that policies were not changing that much, in other words a government running procyclical policies was "obliged" to maintain such policy. What is shown here is that many developing countries were steadily adopting better fiscal policies and therefore voracity effects were progressively disappearing. The second aspect of this chapter is that it answers the question whether procyclical fiscal policies are harmful always and everywhere. Indeed, one can imagine good procyclical policies that would consist in running higher deficit in good economic

times to foster and strengthen economic activity. However the results in this chapter show that countercyclical fiscal policies reduce GDP volatility and therefore reduce uncertainty and encourage private initiatives.

The rest of this chapter is organized as follows: The next section presents the related literature and some stylized facts of fiscal policy in developing countries. Section 3 details theories in favor of fiscal policy as an efficient stabilizing tool. Empirical methodology and results are presented in section 4. The last part concludes.

4.2 Related Literature

The investigation of what has been done by researchers in the field can be divided into two components. The first is a positive analysis and the second a normative analysis. In the positive analysis area, people are interested in the real nature or the effective behaviour (whether a government pursues a pro or a countercyclical policy) of fiscal authorities (e.g. Rand & Tarp, 2002). The normative analysis gives details and evidences on how the fiscal tool should be used to avoid loss of efficiency and to get less macroeconomic fluctuations. A deeper look at what has been done allows us to say that the two analyses are unequally treated in the literature (in terms of quantity of papers dedicated); a clear advantage being given to the positive analysis area. In this paper however, both analyses, normative and positive, are empirically tested showing why countercyclical fiscal policies are preferable to procyclical ones.

4.2.1 Main characteristics of fiscal policy in developing countries

The first step will be to investigate the main characteristics of fiscal policy in developing countries. As said above it is commonly admitted in the literature that fiscal policy is procyclical in many non-OECD countries. In what follows, one will investigate these facts and arguments in the literature for developing countries.

In economic theory, a common wisdom would advise that fiscal policy, namely government spending and tax revenue, is to remain constant throughout the business cycle. In other words, fiscal policy will follow a countercyclical rule (spending going down and tax revenues increasing in good times and public expenditures going up and tax revenues decreasing in recession periods) so the budget surplus, as a share of GDP, should increase during economic booms and decrease during recession. This is the case if policymakers follow the Keynesian prescriptions. One the other side, tax smoothing models inspired by Barro 1979 suggest that fiscal policy should remain neutral all along the business cycle, i.e. one should have zero correlation between government spending

and output (Lucas & Stokey, 1983). As said above the dominant thought is that fiscal policy should be countercyclical.

Alesina & Tabellini 2005 try to test for this effect in developing countries[61]. They found that in developing countries fiscal authority behave differently and conduct procyclical policy. Indeed during expansions, government spending as a share of GDP increases and goes down in bad times (the budget deficit follows the same path, increasing in good times and decreasing in recessions). They develop a model considering that the procyclicality arises much more from voters due to a lack of information and a political agency problem. There are two actors in the model, the government and the private sector consisting of a representative consumer. The private agent maximizes the value of his expected utility from private consumption. The model is as follows:

The expected utility from consumption is as follow: $E\sum_{t=0}^{\infty}\beta^t u(c_t)$. c_t is the consumption in period t, E the expectations factor, u (.) is a smooth and strictly concave increasing factor. In this model one considers that the government uses all its tax revenue for non productive expenditures (rents) and the private agents focus only on controlling the government agency problem. r_t is the total of non-productive spending[62] in the form of rent solely benefiting the government. These rents are financed through τ_t unproductive taxes paid by consumers. Still for the government, it issues debt b_{t+1} in period t at a market price β.

Once government budget constraint is considered then the consumption function becomes: $c_t = y_t - r_t + \beta b_{t+1} - b_t$. Here the consumption depends on the endowment

[61] In OECD countries, fiscal policy has countercyclical properties as it was shown first by Gavin and Perotti (1997), Galí 2005 and Perotti 2004.

[62] For simplicity purposes Alesina and Tabellini do not include in the model productive public spending. Even if such spending was considered the results would remain unchanged.

of income (y_t) net of r_t unproductive spending (rents paid through taxes). b_t is the repayment of previous debt[63].

The government tries to maximize its utility which depends mainly on the money available for rent. Voters are especially concerned about the minimization of their loss in terms of utility and this is the main criteria when they vote for a new government. At the beginning of each period the consumers, knowing their level of income before tax and the level of debt outstanding, select a reservation level of consumption. Consumers vote for a candidate only if he promises to attain the reservation level of consumption. Following that, the government sets its policy for the period, namely the level of debt (b_{t+1}) and rents (r_t). The government does not have any reason not to respect its promise toward consumers since voters can punish the government for not doing so during the current legislature. Therefore, the Alesina & Tabellini (2005) development maximizes the utility of the government that does its best to please the voters, subject to budget constraints. At the steady state, the debt and the rent are not affected by income shock (two effects: the government does not save windfall from a positive income shock and it does not increase its borrowings after a negative income shock). This situation of non-smoothing is due to agency problem. Indeed the consumers do not observe the current debt level and they don't have any information on the amount of rent held by officials. The only solution for them is to ask for a higher utility now as they don't trust the government and don't want the officials to keep all the surplus of income for rent. Their econometric outcomes are in line with the forecast as for developing countries (Latin America and Caribbean), they found that fiscal policy is procyclical (and its behaviour is often countercyclical in OECD countries). This is mainly due to poor control over corruption rather than a borrowing constraint as mentioned by Gavin & Perotti (1997).

This paper gives a good understanding of reasons behind the procyclical nature of fiscal policy in some countries. As we can observe, the borrowing constraint argument is not strong enough to justify the reason why government does not smooth income shocks. For a long time, analysts believed that procyclical fiscal policy was due to constraints in

[63] b_{t+1} means that private agents do not have information on the current level of debt or the indebtedness of the government. They only know about the debt when it is time to repay, namely in period t+1.

the financial market. This means that in periods of economic expansion, governments can borrow easily and increase their spending (in recession, the government can only borrow at high interest rate or sometimes they can't even get a loan at all). The main ideas against the borrowing constraint holds in two arguments. First why don't governments of developing countries self insure themselves by accumulating resources in good times so that they can won't face credit constraints in recessions? And why should lenders not provide funds to countries even if in recession, if they were convinced that the borrowing would optimally smooth out the cycle? These two questions are the main limits of previous studies (e.g. Catao & Sutton 2001, Kaminsky, Reinhart & Vegh 2004) explaining the procyclicality of fiscal policy for less developed countries. Compared to Galí (2005), Alesina and Tabellini (2005) went further in explaining the facts when they take into account the corruption and the level of democracy. But even if those variables are not integrated in the analysis. The result remains unchanged thus showing perhaps that, for developing countries, fiscal policy is strongly procyclical. If this is the case, all external aid (financial or even technical assistance) should emphasize on how to solve this problem.

Talvi & Vegh (2005) found similar results but for them the issue should be considered in terms of optimality for the government. Even though they do not develop on the causes of the countercyclicality of fiscal policy in developing countries (procyclical in advanced economies) they give interesting explanations regarding the mechanisms. Later in this article some of their hypotheses will be empirically tested. Indeed in developing countries, it is admitted that the tax base is at least four times variable than it is in rich countries (Talvi & Vegh, 2005). This is due to the fact that taxes in developing countries are highly dependent on private consumption (importations and Value Added Tax) and in bad times private agents reduce their purchases. Another even more interesting viewpoint is when they defend that it is optimal for the government to run procyclical fiscal policy by reducing the tax rate in good times. When the economy is doing well, the government knows that if it runs important surpluses it will face hard pressures from agents toward more public spending (optimal behaviour for private agents in order to avoid the political agency problems à la Alesina). So by lowering taxes the government allows the private sector to use those extra resources as it sees fit. Hence in this case, procyclical fiscal policy

is a means for the government to escape from public pressure. Another aspect of this is the inflation tax issue. Their empirical strategy is based only on correlation analysis between several variables. It emerges that output and private consumption are about twice as volatile in developing countries as in industrial countries. This lead to a high volatility of the tax base in non-OECD countries since tax revenue mainly depend on private consumption and not on income as in developed countries. Also it appears that government consumption is positively correlated to output in developing countries while any correlation is found between those variables in OECD countries. At the same time inflation tax rate is found to be highly procyclical in less developed countries (inflation tax rate increases in bad times and decreases during expansion)[64]. Finally, fiscal revenues appear to be procyclical for both OECD and developing countries (whereas tax rates are procyclical in developing countries only). This slightly surprising result when compared to the assumptions and to previous results will be discussed later on. As said above, the only argument to explain such government suboptimal policy (procyclical fiscal policy) would be to say that it does not have any other choice since pressures for higher spending are unavoidable.

In our opinion, this paper gives details on some important aspect of fiscal policy in developing countries and is in line with other papers in the field (e.g. Little & al. 1993, Gelb 1989). Unfortunately basic correlation analysis is not, on its own, strong enough to cover and identify transmission channels that explain the procyclicality of public policies. In that sense, explaining procyclicality through tax base variability should be the outcome from multivariate estimations that simultaneously consider the change in public spending. The reason is that tax base variability is not the only means to explain procyclicality, as Talvi & Vegh (2005) suggest (but they don't develop nor test this idea) since government spending can increase ex-nihilo in good times. Therefore in this situation, which is very likely to occur in developing countries (see below), the problem arises from government purchases. Another limit would be to wonder how to explain the fact that tax revenues

[64] In Talvi & Vegh 2005 the inflation tax rate is used as a proxy to show that all other tax rates are procyclical. I think that this is a good proxy since tax revenues depend on consumption in developing countries and inflation mainly touches product of wide use in developing countries (food and other basic items).

are procyclical when one has just been defending that tax rates are procyclical. The authors addressed this issue arguing that in good times the variability of the tax base causes an increase of consumption and therefore brings more tax revenues to the government even if tax rates are relatively low. In less prosperous periods, fiscal authorities increase tax rates while revenues decline because of a low level of consumption. If one can agree with the fact that inflation tax revenue and rate are procyclical it becomes a big challenge to assess the same for all other kind of taxes. This argument needs to be further developed using strong empirical analyses before giving the determinant role to the tax base. As a benchmark, in Alesina & Tabellini (2005), the procyclicality of fiscal policy in developing countries comes from spending rather than tax revenues.

4.2.1.1 Voracity effects

Other authors develop a concept explaining why one should not neglect the spending side when studying response to shocks in developing countries. This is known as the voracity effect. The seminal contribution on this issue has been made by Tornell & Lane (1999) who define the voracity effect as a more-than-proportional increase in discretionary redistribution in response to an increase in the raw rate of return in the efficient sector. Several analyses on this topic depart from the observation that, countries with weak legal and political institutions and the presence of multiple powerful groups in society have relatively low economic growth. Compared to other anterior studies, (e.g. Knack & Keeper (1995) who only focused on the growth aspect), Tornell & Lane (1999) link procyclical response of fiscal policy (and decline in quality of public investment) and low economic growth to weak institutions and fractionalization, as possible explanations. They present a couple of assumptions and develop a model to assess these hypotheses. First Tornell & Lane (1999) model the extent of discretionary fiscal redistribution which is endogenously determined by the existence of powerful groups, the raw rates of return and by the institutional barriers. The underlying idea is to consider that if some groups are able to capture fiscal transfers this will create an unfair situation which will lead to a movement of capital in the shadow sector. Indeed as transfers have to be financed by

some taxation, higher transfer for one group means more taxation on other agents in the economy. To escape from this arbitrary taxation, private agents will prefer to invest in the "shadow" economy[65]. Three hypotheses are presented in order to explain the voracity effect in developing countries. First, growth rate is relatively lower in countries where we do not have strong and reliable institutions to avoid discretionary distribution with multiple powerful groups compared to countries with a single group. This is due to the fact that multiple groups create a redistribution struggle (as there is no cooperation between groups) and therefore more money for the public authorities. The second hypothesis considers the economy as a market in which firms play Cournot, meaning that the more groups we have (reduction in power concentration) in the economy, the better the economic performance. And the last hypothesis postulates that if the rate of return in the formal sector increases, growth rate will slow down. The reason for that is when the profitability of investment increases in the formal sector, increases will have a direct voracity effect since powerful groups will seek higher discretionary transfers. Indeed the government will need to increase tax rates since the revenues from "good shock" are no longer enough. These three assumptions lead to the same effect: capital switches from the formal sector to the "shadow" economy which is safe from taxation, and therefore a decline in the growth rate. A theoretical model is developed to demonstrate such effects.

However this paper raises some questions and also identifies some limits. In our opinion, assuming that there is zero taxation in the "shadow" economy is far from the reality. Indeed in developing countries the informal sector pays taxes even if we can consider that it is not as much as in the formal sector. Therefore in their model, a tax rate (even if lower than that in the formal sector) should be included. A strong empirical assessment of the Tornell & Lane (1999) model could be an important contribution to demonstrate the accuracy of their findings.

For some other authors, Tornell & Lane (1999) found only a partial equilibrium since the number of rent-seekers is not constant. Murphy & al. (1993) and Acemoglu (1995) advocate for the existence of multiple equilibriums. The first fact considers that rent-

[65] Here Shadow economy is defined as a sector that is out of the reach of fiscal authorities (no taxation) and where the raw rate of return for investments is lower compared to the formal sector of the economy.

seekers prey on productive agents therefore an increase in the number of rent-seekers lowers the returns of both rent-seekers and private entrepreneurs. In this situation rent-seeking activity can lower "honest" entrepreneurship activity since it becomes more profitable to seek rent rather than having "honest" activities. In this equilibrium the number of rent-seekers has increased compared to the initial situation.

Another amendment was introduced by Baland & François (2000) who state that the causality can run in the opposite way. Indeed, they state that increasing entrepreneurships can also crowd out rent-seeking activities. When the entrepreneurship arena is producing new and better goods and services it can destroys existing rents. The main concern of Baland & François (2000) is to explain why in some countries rent-seeking increases with income and in other places it does not. The general rule from Tornell & Lane (1999) in that regard becomes partial since it is true only in very particular cases. According to Baland & François (2000) the response expected in a country after a positive shock (income or terms of trade) depends on the initial equilibrium of that economy. Indeed if at the beginning the number of entrepreneurs outweighs rent-seekers, a boom in the economy's resources would increase entrepreneurship and national income. As all rent opportunities are already destroyed by an increase in income, therefore demand increases leading toward higher profits and incentives for entrepreneurs. In contrast, if the initial equilibrium of the economy is characterized by a majority of rent-seekers, any increase in income (positive shock) will lower the returns of entrepreneurship compare to profit from rents. The increase in demand after the income shock gives greater opportunity for more rent. This was the case for countries like Nigeria, Saudi Arabia, Kuwait, Trinidad, and the United Arab Emirates in the late 1970s after the oil boom that failed to increase their growth rate. These "failures" were characterized by an increase in the share of public consumption in GDP and a low share of manufacturing in GDP. This meant that the supplement of income was used for current spending instead of investment in the manufacturing sector or for any other efficient placement. On the other hand, countries like Indonesia, Malaysia, and Norway during the same period had increases in their GDP per capita growth as well as a higher share of manufacturing in GDP and a relatively low ratio of public spending over GDP. For Tornell & Lane (1999) the two patterns are the outcome of different initial conditions. The cases of "failure" are explained by a low initial

industrial base and entrepreneurship while "success" cases are characterized by the opposite.

This article was a great contribution in the literature explaining the procyclical behavior of fiscal policies in developing countries. However one should not limit the initial condition only to the dynamism of the entrepreneurial sector or to the activism of rent-seekers. These two activities are highly correlated to the quality and credibility of institutions in the economy.

After presenting and giving some explanations regarding the consensus on the procyclical nature of fiscal policies, I determine in the following paragraphs whether fiscal policy can be seen as an efficient tool for stabilization. To our knowledge there are no recent studies on this topic for developing countries, apart from the model developed by Galí but which was only tested for advanced economies.

4.2.2 Fiscal policy and its stabilizer properties: What do we know?

4.2.2.1 The model of Jordi Galí (the Gap model)

Galí (2005) exposes and sheds some light on two major themes for new Keynesians which are the negative effects of recessions on the economy and the effectiveness of fiscal policy as a stabilization tool. As already said this is a Keynesian point of view but for neo-classicals (real business cycle theory) business cycles are viewed as the economy's optimal response to shocks and any attempt to stabilize may be counterproductive and reduce welfare. The first point for Galí (2005) is to give evidence of the negative effect of volatility and also of the effectiveness of fiscal policy as a stabilization tool. To assess the relevance of the Keynesian view, they develop a model that measures the efficient level of economic activity and the effects on welfare once the economy is far from this equilibrium state. So the first step of their model will be to give evidences showing that in recession periods, efficiency losses are important.

The variable built called "inefficiency gap" (gap infra) is a measure of aggregate inefficiencies associated to the costs from the period of expansion or recession. This indicator is simply the difference between the marginal product of labor and the marginal rate of substitution between consumption and leisure. The efficient level of economic activity is reached when $gap_t = 0$ at this point all resources are used at their efficient level. The measure is constructed as follow:

$$gap_t = mrs_t - mpn_t$$

Where mrs_t and mpn_t are respectively the marginal rate of substitution between consumption and leisure and the marginal product of labor. gap_t variable is assumed to follow a stationary process with a constant mean (gap). When constructing a measure of the gap from data for the US post-war economy it was found that there is a systematic relationship between large fluctuations in the degree of inefficiency in the allocation of resources and the business cycle (recessions correspond to periods with unusually large aggregate inefficiencies). These findings give favourable evidence for the Keynesian interpretation of business cycle and its effects. Continuing with this model, the next step of Galí's is to show that the gap can be written as an expression of the inefficiencies in the labor and in the goods market. Indeed one can have:

$$gap_t = -(\mu_t^p + \mu_t^w)$$

With $\mu_t^p = p_t - (w_t - mpn_t) = mpn_t - (w_t - p_t)$

And $\mu_w^t = (w_t - p_t) - mrs_t$

μ_t^p called average price markup, is the wedge between the log of the labor productivity and the log of the real wage. This corresponds to a measure of the deviation from perfect competition in the goods market. μ_t^w called the average wage markup, is the wedge between the log of the real wage and the log of the marginal rate of substitution between consumption and leisure (this reflects distortions in the labor market). w_t is the log of the compensation per additional unit of labor input.

Galí & al. (2005) find that the dominant fluctuations in the gap variable come from the larger variation in the labor market wedge rather than the wedge in the goods market. This is mainly due to the rigidity of nominal wage and to the non-Walrasian nature of contractual relationships between employers and employees. These rigidities explain the fact that real wages are higher than the marginal rate of substitution in downturn periods. Also making real wages fully flexible will not ensure that we retrieve the first best allocation[66]. The second best situation could be reached only if the aggregate demand increases. Now we are on course to show the effects (negative) of output gap fluctuation on welfare. They found that on average the fluctuation in the gap variable generates losses because "the welfare effects of employment fluctuations about the steady state are asymmetric"[67]. In others words, it is clear to them that there is a gain in stabilizing the gap variable otherwise one will have an important negative effect on welfare (measured here by the value of the utility)[68]. Applying the theory to post-war US data (from 1960:IV to 2004:IV), Galí & al. (2005) found that in times of large recession the efficiency losses represent about 2% of the period's potential level of consumption (relatively to what should be equal to the level of consumption). And this negative effect tends to be persistent over years. On the other hand, the gain from major cyclical peaks is around 1%. Actually this is a clear evidence of the asymmetric effects of business cycle on welfare. Given these facts, what would be the answer one could expect from fiscal policy for stabilization? In the analysis of Galí & al. (2005), an increase in public spending (which has an expansionary effect in a Keynesian view) in periods of recession can offset (or at least reduce) the negative outcome. Also they found that the larger the government spending multiplier, the greater the incentive to raise government purchases in "bad times". From the estimation of a linear model:

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[66] If there is no increase in the level of economic activity any decline in the labor market wedge will be offset by an increase of equal size in the average price markup.

[67] This means that the efficiency cost of a contraction is below the steady state (i.e. when the value of gap is very small or highly negative)

[68] Formally the equation is: $U_t - U = \alpha gap_t - \beta gap_t^2$ with $gap_t \equiv gap_t - gap$. Then we can see that large variations of gap variable lead to a smaller value of U_t

$$d_t^* = \phi_0 + \phi_x E_{t-1}\{x_t\} + \phi_b b_{t-1} + \phi_d d_{t-1}^* + u_t$$

d_t^* is the cyclically adjusted deficit for year t and b_{t-1} is the amount of outstanding debt in period t-1. If the government's fiscal policy is countercyclical, one will have a negative value for ϕ_x the coefficient in front of $E_{t-1}\{x_t\}$ which is the year t-1 forecast of output gap for year t. It emerges from these estimations that OECD countries mainly pursue discretionary countercyclical fiscal policies and they use their structural deficits to fight recessions and support their economy.

This paper is a great contribution to the analysis of the efficiency of fiscal policy as a stabilizer tool for the macroeconomic environment in developed countries. And I believe that any other attempt at assessing fiscal policy as an answer to fluctuations should start from this analysis. The reason is straightforward and understandable in this world where intervention from public authorities to regulate the market or rescue private firms (and financial corporations) from a collapse is increasing crisis after crisis. At least one can say that for developed countries, Keynes was right when he said that business cycles have a negative impact on welfare and that government can be an efficient regulator. It seems trivial that for developing countries the same rules should apply. In what follows, I present some characteristics of business cycles in developing countries, before moving on to present our model.

4.2.2.2 Business cycles in developing countries

After explaining the behaviour of fiscal policies in developing countries we now come to the second issue we need to cover before any empirical assessment. As we did previously, we present the main characteristics of business cycles in developing countries. It will then become easier afterwards to determine whether fiscal policy can be an efficient tool to smooth the cycle (or stabilize the economy). It is widely accepted that macroeconomic instabilities have a negative effect in both advanced and developing economies. The literature is well documented on this issue but studies on developing

countries remain scarce. Agénor & al. (2000) using time series data of 12 developing countries study the nature of macroeconomic fluctuations.

First they rendered stationary the macroeconomic series since many of them have different trends over time. From a univariate correlation analysis Agénor & al. (2000) found that volatility of output is higher in developing countries than in industrial economies depending on the filter used. Indeed the volatility obtained from the BP filter is lower than the one from the HP filter. This is mainly due to the fact that the BP filter eliminates the high frequency variations in the data whereas the HP filter only eliminates low frequency variations in the data. The results show also a strong persistence of the volatility across several quarters. This result is common to some other studies such as Rand & Tarp (2002) who found that shocks in developed countries are one of the main causes of short run macroeconomic fluctuations in developing countries. A possible transmission channel could be throughout the world interest rate according to Agénor & al. (2000) which is believed to have an important impact on developing economies since these countries do not have a well developed local capital market. And the positive correlation between industrial output and a weighted index of real interest rate found for most of the countries seems to confirm this argument.

The investigation about the relationship between the foreign trade and business cycle is done by looking into the correlation between trade balance and industrial output. For some countries (Chile, Mexico, Turkey, and Uruguay) this correlation is strongly negative (negative for both filters) meaning that when the industrial output goes up exportations decrease or importations increase. This correlation is strongly positive for the other countries in the sample such as Morocco, Nigeria, Colombia, Korea, and Mexico. Two arguments can be given to explain this positive correlation. First, this could be the result of the fact that merchandise imports are not highly sensitive to fluctuations in domestic demand. Second, since these developing and emerging economies are unlikely to any influence the world price of any industrial commodity, the positive correlation is consistent with demand shifts that cause a simultaneous increase in world price and export sectors (Agénor & al. 2000). As some authors mention (e.g. Deaton & Miller 1995,

Rodriguez-Mata 1997, Mendoza 1995), terms of trade shocks explain more than half of output fluctuations in developing countries.

Another variable of interest is the behavior of wages (nominal and real) and, determining the sign of the correlations between wages and output is equivalent to an assessment of different theories and their predictions. Agénor & al. (2000) found evidence of procyclical real wage variation. This result is consistent with the predictions of the Real Business Cycle (RBC hereafter) models for which technological shocks are dominant and it shifts the labor demand in the short run. At the same time, this outcome shows the limit of the Keynesian view that real wages are countercyclical. One explanation of the difference between these theories could be the fact that, as Abraham & Haltiwanger (1995) have observed, the effect depends on the nature of the shock. Specifically, technological shocks have procyclical effects on real wages whereas nominal shocks have countercyclical effects on real wages. Therefore one can argue that the Keynesian analysis underestimates the effects of technological shocks. It is generally admitted that prices in industrial countries have a countercyclical behavior and this fact provides support for supply side models of business cycle (Rand & Tarp 2002). Agénor & al. (2000) found similar results for some developing countries in their sample (Colombia, India, Korea, Malaysia, Morocco, Nigeria and Turkey) for which price level and inflation are countercyclical (negative correlation between inflation, price and industrial output). This result seems to be strong since Rand & Tarp (2002) found also that the cyclical patterns of price level (CPI) and inflation are countercyclical (Hoffmeister & al. 1997 got the same outcomes for sub-Saharan African countries).

Finally, we will focus on the behavior of public sector variable throughout the business cycle in developing economies. When one has a look at the current literature, it seems that consumption (both private and public) is positively correlated with output in least developed countries. For public consumption, the correlation remains positive (Rand & Tarp 2002), so this variable is procyclical which hence intensifies macroeconomic fluctuations. However Agénor & al. (2000) found an opposite result indicating that government spending plays a countercyclical role. This difference could have been due to two causes. First, the country samples are totally different; Agénor & al. (2000) usually use

data from countries classified as emerging markets (Korea, Chile, Mexico, Philippines etc.) while Rand & Tarp 2002 rely on "genuine" developing countries (Côte d'Ivoire, Malawi, Nigeria, Zimbabwe etc.). The second possible cause could be their respective definitions of public expenditures that differ. Rand & Tarp (2002) decompose government spending into pure consumption and productive spending, namely public investment. When they do that, they find that public investment is procyclical for most of the countries in their sample (except for North African and Asian countries for which public investment is countercyclical). So, including investment and wage payments for example, could give us such results where government expenditures are countercyclical. Agénor & al. (2000) found that government revenues are countercyclical meaning that in good times people pays more tax. After summing up the global effect of government behaviour, they found that fiscal variables have countercyclical effects on business cycles. Therefore fiscal policy can play an important role in macroeconomic stabilization in the short-run. As said above, if one can accept that fiscal policy could effectively be an efficient stabilizer tool the question to be asked is whether this is a real situation in developing countries? Are fiscal variables really countercyclical? These questions will be answered in the following empirical sections.

Two main points come to light in this review of the stylized facts on macroeconomic fluctuations in developing countries. First, terms of trade appear to be the main source of short-run fluctuations in developing (and emerging) countries. Second, fiscal variables are procyclical in developing countries, but this result seems to be different for emerging markets where fiscal policy effectively plays a stabilizing role. This section will be helpful in identifying the core variables to be included in our following estimations in order to define the potential stabilizer properties of fiscal policy.

4.3 Empirical Strategy: a two step procedure.

The analysis of fiscal procyclicality in developing countries will be done in two steps. The first stage will be a comparison of fiscal behaviour across countries. Secondly, I will be estimating the impact of fiscal procyclicality on the real economies. The rational of such procedure is detailed in the following paragraphs.

4.3.1 First Stage Regression: Measuring the Procyclicality of budgetary Policies.

The hypothesis underlying the Gali's model has raised some issues. Indeed, in this model, a unique coefficient on the procyclicality of fiscal policy is calculated for the whole period (considered). However there is no evidence supporting the idea that a government that runs procyclical policies during a given period (a year for instance) will keep that strategy all along the period. Depending on cyclical conditions, public authorities can decide for a year to pursue countercyclical budget policies (if the previous policy was procyclical) and keep the latter policy (or not) for the future. Also it is difficult for existing models to capture the evolution of budget reaction to changes in output gap. Indeed in period t a fiscal policy can be procyclical (or countercyclical) but a change can be operated steadily (and not suddenly) so the policy becomes progressively countercyclical (less procyclical).

To come over such limits, some authors (e.g. Aghion & Marinescu 2006) calculated time varying coefficients. These yearly estimated coefficients of procyclicality therefore give an indication on how government budget variables respond to change in the output gap over time.

4.3.1.1 Econometric Method

In order to make full use of their structure, data for each country will be computed. The method using local Gaussian-weighted ordinary least squares estimates will be preferred (as Aghion & Marinescu) in the following.

The equation estimated in this first stage will be in this form:

$$fiscal_{i\tau} = \beta_{1it} ygap_{i\tau} + \beta_{2it} b_{i\tau-1} + \beta_{3it} control\,\text{var}iables_{i\tau} + \varepsilon_{i\tau} \quad \textbf{(1)}$$

The dependent variable $fiscal_{i\tau}$, in country i and year τ, denotes the fiscal variable under consideration. In the following analysis, cyclically adjusted primary deficit, government investment and public spending will be used to measure procyclicality of fiscal policies. $ygap_{i\tau}$ represents the output gap, while $b_{i\tau-1}$ is the value of public debt from previous period τ-1 of country i. Finally $control\,\text{var}iables_{i\tau}$ is a set of relevant control variables introduced in the time series estimation. Details on the control variables will be given later in the chapter.

4.3.1.2 The budgetary variables: computing Fiscal Activism.

The procyclicality of fiscal policies can be assessed through several methods. The most common variables used are fiscal budget deficit, public debt growth, government investment or government expenses. For any variable used, the main point will be to purge the cyclical components or automatic stabilizers (not managed by authorities). Indeed, once automatic stabilizers are removed from the selected fiscal variable, this will give the genuine policy that public authorities pursue.

In other words, whenever for instance the output gap increases, i.e.; the actual GDP is higher than the potential output, the primary fiscal balance will be automatically improved. On the same vein, when the output gap falls primary fiscal balance also weakens. This is due to the fact that revenues are more responsive than expenditures to changes in the output gap simply because tax bases automatically change when the output

gap changes (Abdih & al. 2010). Therefore, the fiscal variables are influenced by both cyclical and policy actions. To distinguish the fiscal impulse from automatic responses I follow then IMF 2009 that breaks down the change in the primary balance (PB) as a function of the change in the cyclically adjusted primary balance (CAPB) and cyclical primary balance (CPB).

$$\Delta PB = \Delta CAPB + \Delta CPB$$

Where the change in the CAPB is defined as the fiscal impulse and the variation of CPB the automatic stabilizers. Therefore one can infer that Fiscal policy is contractionary when the change in the cyclically adjusted non-oil primary balance is positive (CAPB>0), and is expansionary when the change in the cyclically adjusted non-oil primary balance is negative (CAPB<0) IMF 2009.

In this chapter, in order to assess the level of procyclicality of a fiscal policy, I need to investigate the relationship between output gap and the cyclically adjusted primary balance (CAPB). Whenever the sign of the coefficient of the output gap variable is positive this means that cyclically adjusted fiscal deficit and the business cycle move in the same direction. In other words, the authorities run procyclical policies. If one obtains instead a negative sign for output gap, then public policies move in the same way as the business cycle.

Also the cyclically adjusted fiscal deficit is obtained by applying the HP filter on the primary fiscal balance[69].

[69] Abdih & al. 2010 applied the same procedure while calculating the cyclically adjusted primary fiscal balance. Namely the use of the HP filter allows us to identify the a-cyclical component of the fiscal balance which is used in our estimations.

4.3.2 The method

For each country, I estimated an equation in the form of (1), with β_{1it} the coefficient of procyclicality. A negative sign for β_{1it} means that the budget deficit (or government spending) increases when the economy (output gap becomes more negative) slow down. Also and as said earlier, to make full use of the panel structure of the database a coefficient of procyclicality is estimated for each country i at year t.

4.3.2.1 Finite rolling window least squares estimating method

At least two methods of estimating yearly coefficients exist in the literature. The first method is to compute finite rolling window least squares estimates (RWLSE). The first step for this method is to choose a number of periods for centring the rolling window. If one chooses 10-years, the RWLSE method amounts to estimating the coefficients of procyclicality at year t in a given country by running the following regression for all periods:

$$fiscal_{it} = \beta_{1i\tau} ygap + \beta_{2it} control\ \text{var}iables + \varepsilon_{i\tau} \text{ for } \tau \in (t-5, t+4)$$

However this method presents some limits and is not of common use in empirical articles. By construction, one loses the first five years and the last four years of data for each country. Also one can have important differences between estimated coefficients since the coefficients are estimated by discarding, at each time period, one old observation and taking into account a new one. Therefore, if there is a wide gap between the current observation and the "future", one series may be noisier and affected by transitory changes (Aghion & Marinescu 2007).

4.3.2.2 Local Gaussian-weighted ordinary Least squares estimates

The LGWOLS method allows the use of all observations for each year and the closest observations to the year considered are given a greater weight. To compute coefficients β_{jit} the LGWOLS method uses all observations available; weighted by a Gaussian centered at t, for country i and then performs one regression for each date t. A single equation will be in this form:

$$fiscal_{it} = \beta_{1it} ygap_{i\tau} + \beta_{2it} control \text{ var} iables + \varepsilon_{i\tau}, \quad \textbf{(1)}$$

With $\varepsilon_{i\tau} \sim N\left(0, \frac{\sigma^2}{\omega_t(\tau)}\right)$ and $\omega_t(\tau) = \frac{1}{\sigma\sqrt{2\prod}} \exp\left(-\frac{(\tau - t)^2}{2\sigma^2}\right)$

Concerning the choice of the σ parameter, there is no theoretical or special method to our knowledge. This explains our choice for a σ equals to 5.[70]

4.4 The Results from first step regressions: African Countries

4.4.1 Procyclicality of Fiscal Policy in African Economies

The results are presented in the form of diagrams for ease of reading. The dynamics of coefficients of procyclicality for each country is represented by dots with different colours. Indeed, when the coefficient of procyclicality is statistically significant (at least at 10% level) for the year considered, the dots are in blue colour. If red, the dots show statistically non-significant coefficients. These insignificant coefficients are interpreted as periods where fiscal policy is acyclical.

[70] Aghion & Marinescu chooses the same parameter. Also when I try higher or lower parameters (near 5) the results do not change at all.

Control variables include inflation, GDP per capita growth, lagged public debt, and an indicator of government size[71]. The rational for the use of inflation is that it could prevent the government from borrowing during recessions if people expect that such borrowing might result in higher inflation in the future. When I introduce the lagged public debt, it reasonably supposes that the discretionary component of the budget has largely been made by the end of the previous year.

In addition to these traditional factors, in this study I introduce two new variables: the current account balance and the durability of political regimes. The current account variable is here to capture possible current account targeting policies[72]. Indeed there is a possible bias in the regressions if the fact that the government can use the budget to adjust the level of the current account is not considered. Namely the government targets a given current account balance and uses the budget balance as a tool to reach that goal. Therefore this model will allow us to avoid a spurious β_{1it} coefficient since the current account targeting effect might be captured by this number.

Also I consider an institutional aspect relevant to our topic which is the length of political regimes. Durable is defined as the number of years since the most recent regime change or the end of a transition period defined by the lack of stable political institutions (Polity IV Project: Dataset Users' Manual). The idea is that, the longer a political regime stays in power, the lower the incentive to run procyclical fiscal policies. The "regime" pursuing procyclical policies runs the risk, if it stays in power for a long period, of facing a future severe economic downturn without any resource to bailout the economy. On the contrary, if the government knows that it might lose power very shortly, in periods of boom, the "rational" behaviour will be to increase expenses and consequently deprive the next ruling team of rents (fiscal-political cycle theory). Therefore, the longer the government remains the higher our expectations for a countercyclical fiscal behaviour.

[71] Due to weak data, government size was not considered while studying government consumption procyclicality to avoid collinearity issues. Since details necessary to government size computing (which is computed as the total of all public spending including debt repayment) were very poor.

[72] The current account targeting theory is presented in more detail in the first chapter of this dissertation.

The regression results for each individual country (including the control variables) are presented in the next section.

4.4.2 The Adjusted Primary Fiscal Balance

The cyclically adjusted fiscal balance is computed "indirectly" by using the general government debt. Indeed the change in general government debt $(B_{it} - B_{i,t-1})$ gives the overall fiscal deficit. Once the overall budget deficit is obtained one purges the interest payments (i_{it}) on debt and this is equivalent to the primary fiscal deficit.

$$(B_{it} - B_{i,t-1}) - i_{it} \equiv \textbf{Primary Fiscal Deficit (2)}$$

The baseline for African countries reflects a diverse situation. However the general statement is that a linear and constant policy does not exist. In other words, governments change their policies across years depending on punctual situations of the economy or they adopt a more structural change. Three cases are identified. First, some countries move steadily from acyclical toward strong countercyclical policies in recent years. Second, some governments keep a constant procyclical fiscal policy all along the period. Also, for a last group of countries, policies seem to remain acyclical since any reaction to output gap variations were noticed.

In the first step estimations of the acyclical fiscal policies, meaning that public policies do not change when output gap fluctuates; are defined as the periods for which coefficients of procyclicality are statistically unsignificant[73].

[73] However one is aware that in some cases this can be due to irrelevance in the data.

4.4.3 The results

Table of Figures 4.1 shows a set of countries for which initially the adjusted primary fiscal deficit was not reactive to the business cycle. From around 1971 up to early 2000, the fiscal deficits of Gambia, Kenya, Côte d'Ivoire, Mauritius and Tunisia were acyclical but slightly countercyclical. A factor common to all od these six Sub-Saharian African economies is the deep change in the behaviour of their budget deficits, which became strongly countercyclical. Many factors that will be detailed later in this paper could explain this change. Swaziland presents a special case where fiscal policy (except during short episodes 1977 to 1983 and from 1993 to 2001) has remained countercyclical.

Table of figures 4.1: Adjusted Primary Fiscal Deficit Procyclicality

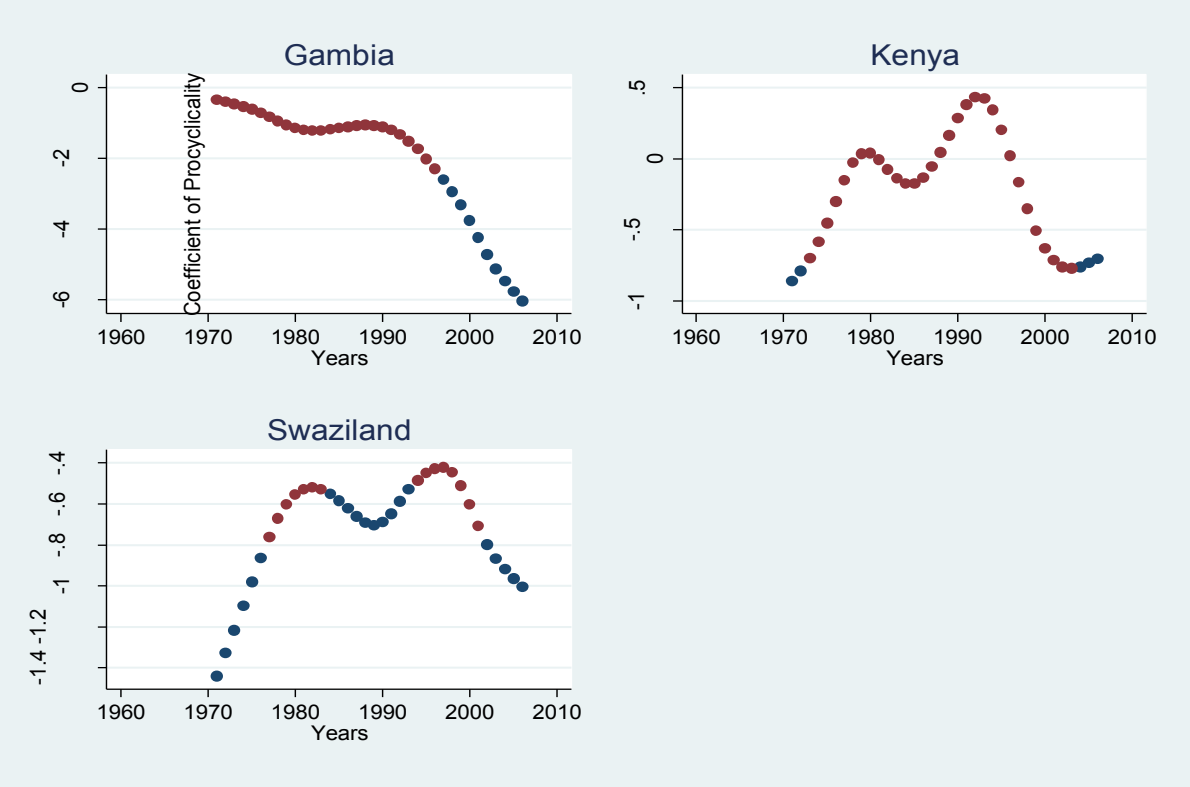
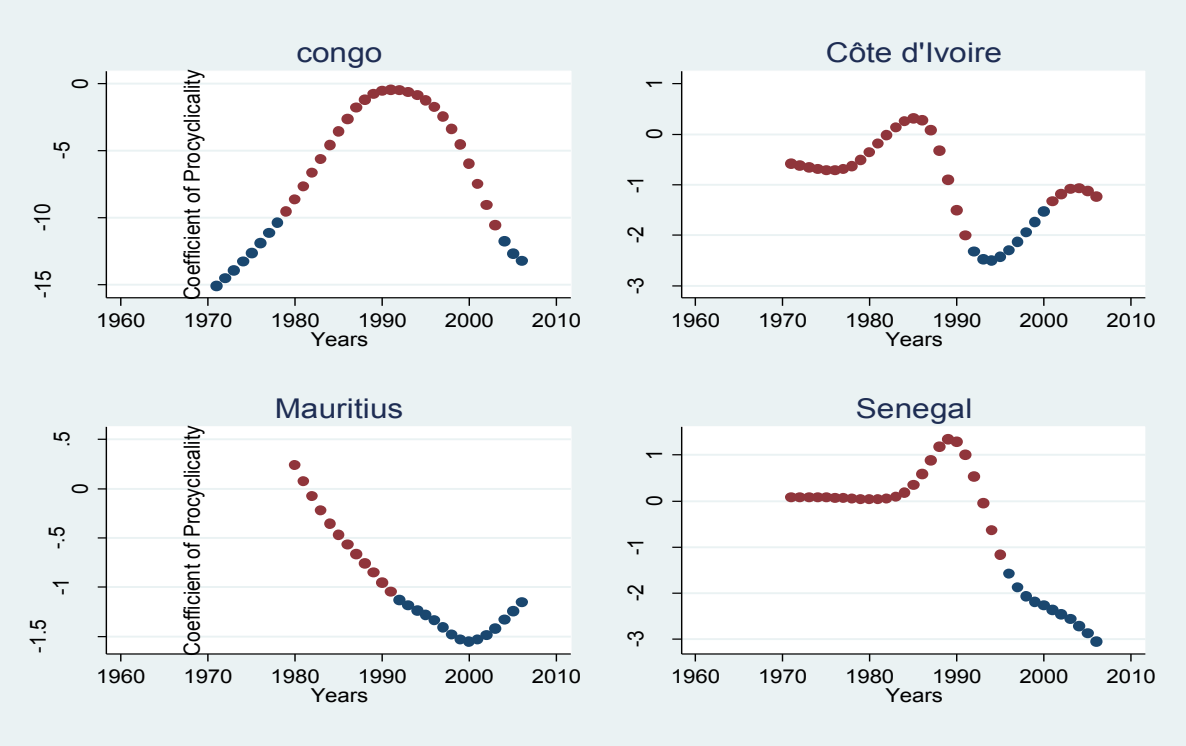


Table of figures 4.1: Adjusted Primary Fiscal Deficit Procyclicality (2)



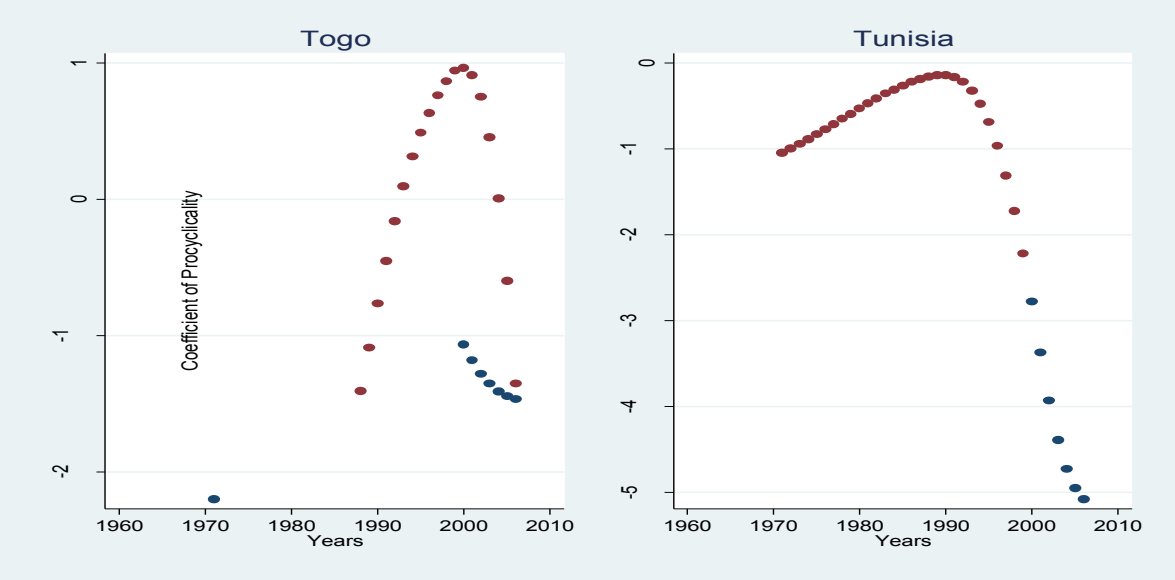
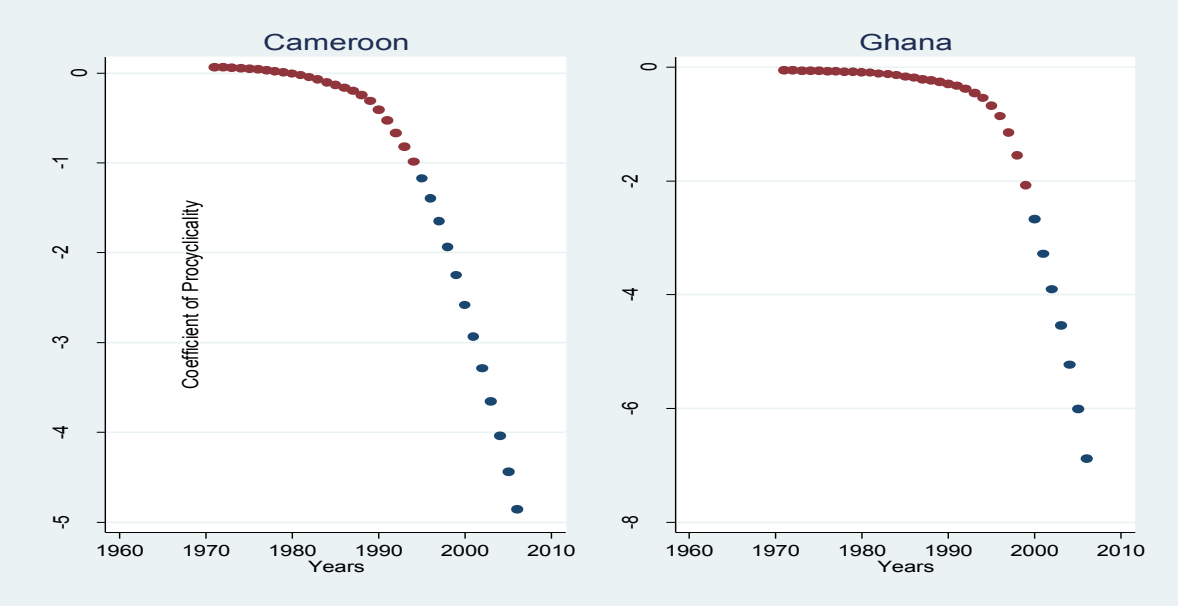


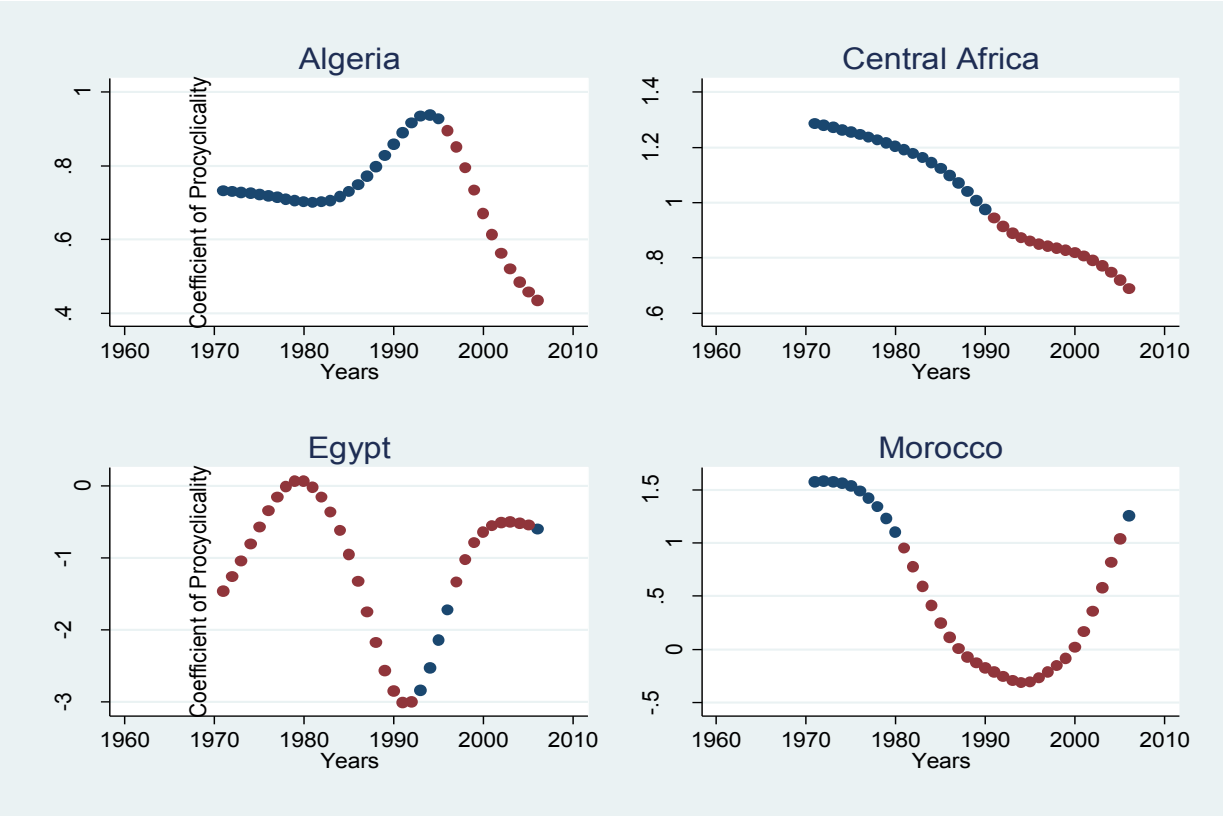
Table of figures 4.1: Adjusted Primary Fiscal Deficit Procyclicality (3)



A second set of countries is characterized by a first period from 1971 up to the late 1990's where the policy was mostly procyclical and then an improvement was noticed. Indeed, Table of Figures 4.2 (Algeria, Burundi, Central Africa, Egypt, Madagascar, Mauritania and Morocco) shows an initial situation of high procyclicality but later the policy changes to a more acyclical one. More precisely, for Central African Republic, Algeria and Mauritania, the recent behaviour of their budget deficit could mean that the situation will become more countercyclical in coming years.

Finally and still concerning the discretionary behaviour of budget deficit, a third group I identify presents a rather "deteriorated" situation. For these economies either move from countercyclical policies to more acyclical or even towards procyclical policies (Table Figures 4.3). The most radical change among these countries concerns Lesotho and Sudan. For Lesotho the data shows that from 1971 up to 2000 the policies were insensitive to

Table of Figures 4.2: Improvement: from procyclical to acyclical policies



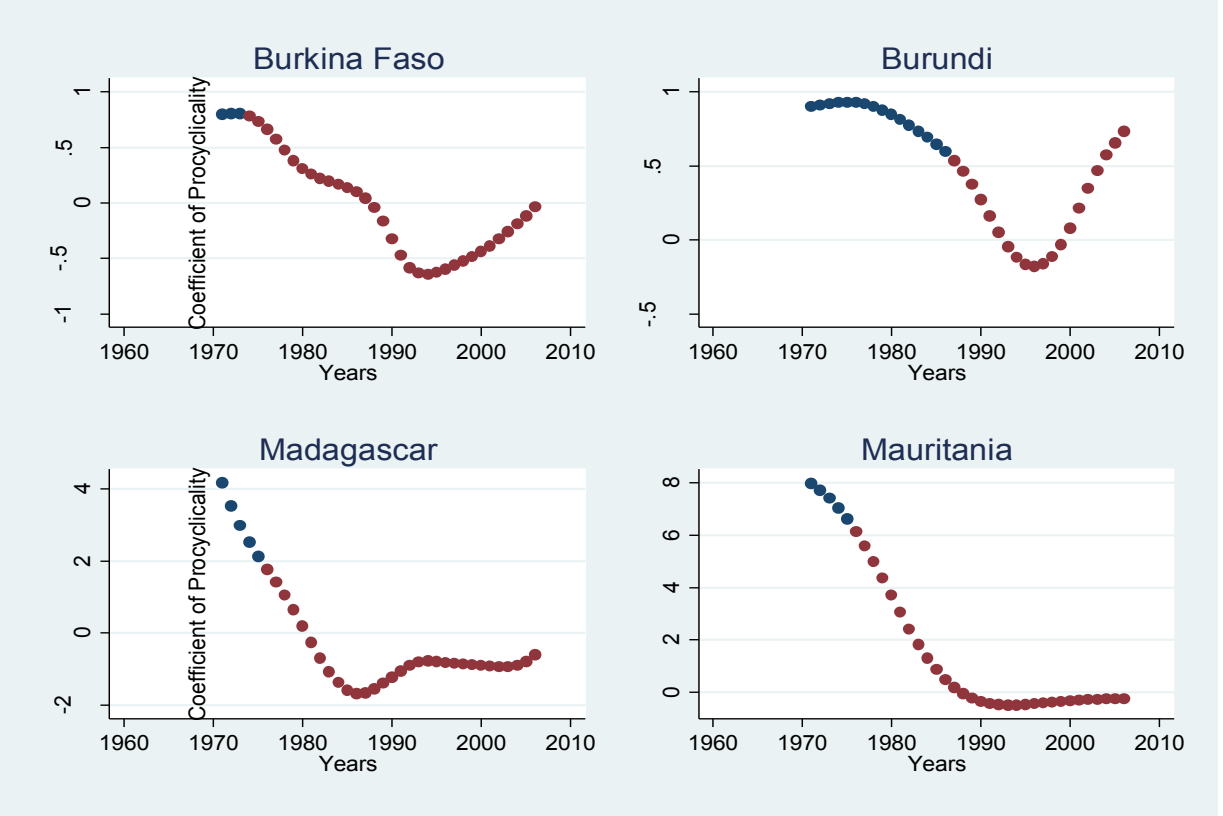
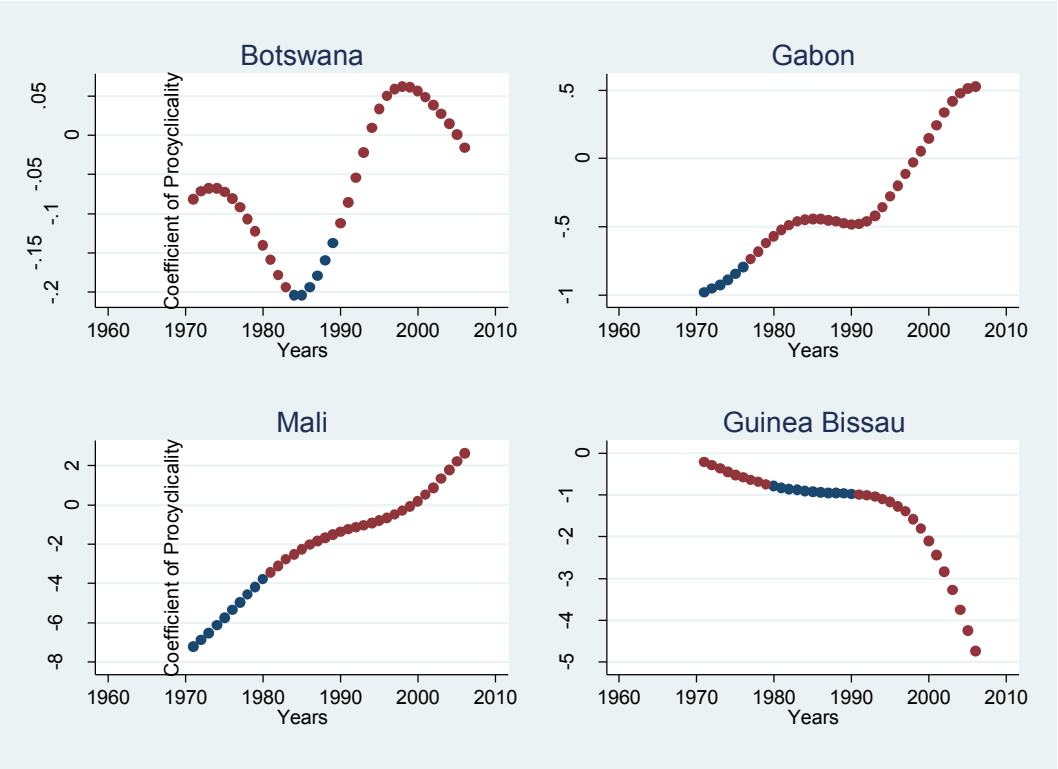
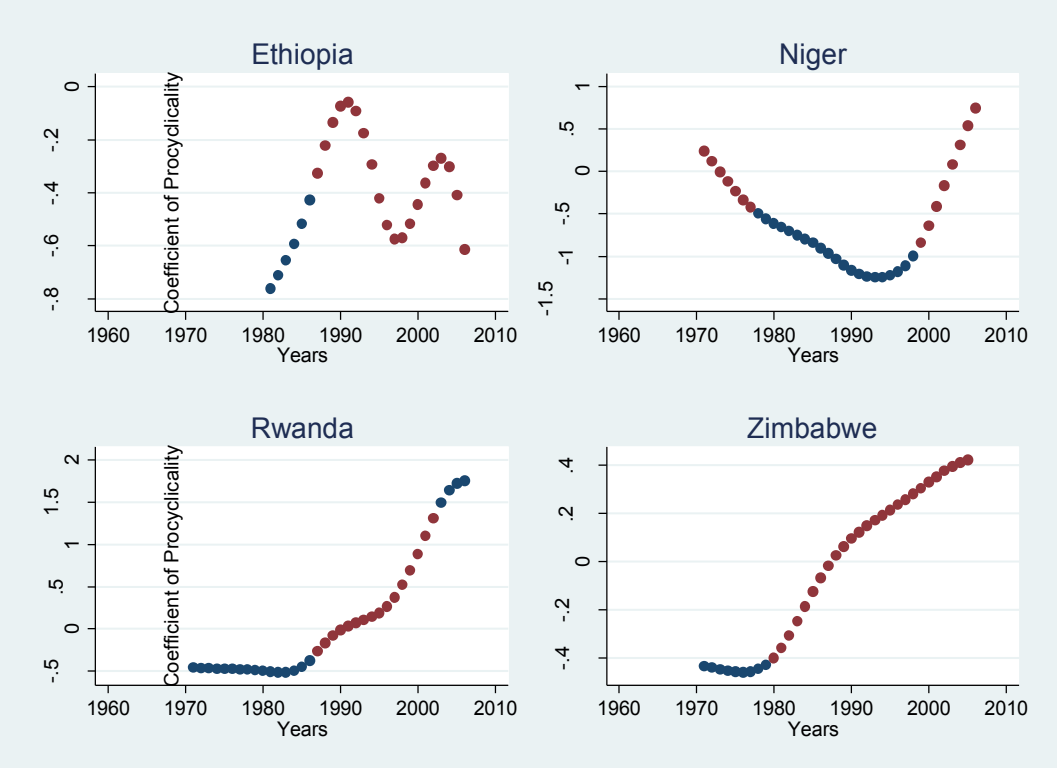


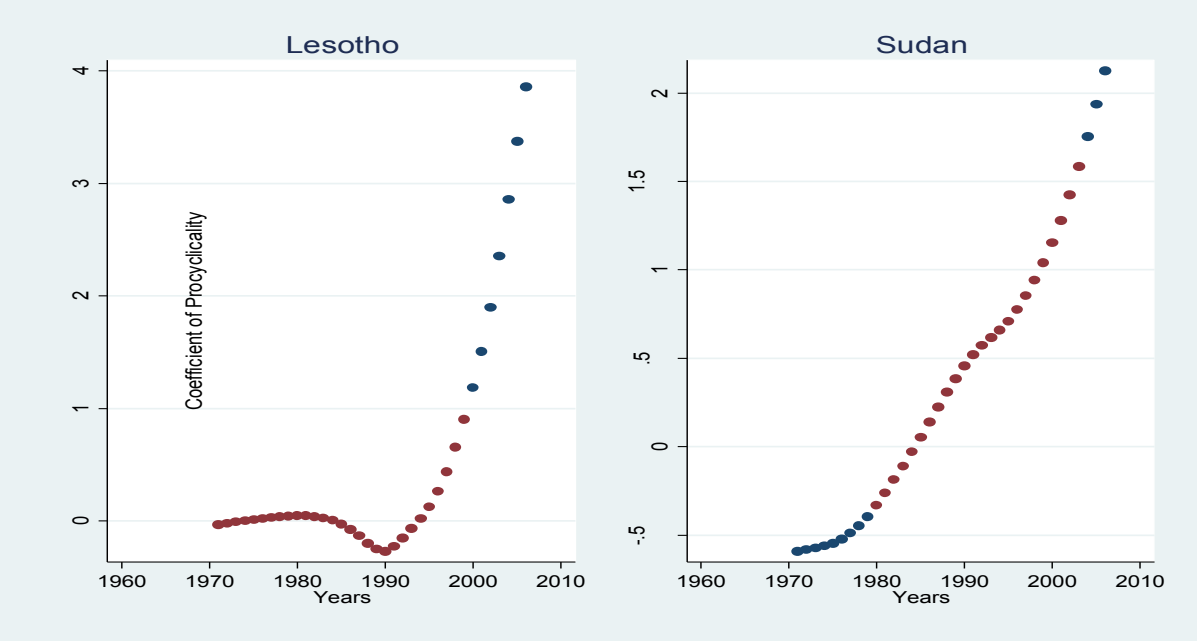
Table of Figures 4.3: fiscal policy's degradation: counter to acyclical





fluctuations in the business cycle (Table of Figure 4.4). But the year 2001 inaugurates a new era where policies were strongly procyclical. Sudan presents a similar situation where things changed deeply. At this point one cannot help but wonder if a procyclical fiscal policy is absolutely and everywhere always negative? Indeed in the Sudanese case (or Lesotho) would it not be possible for these governments to run procyclical policies in periods of economic prosperity to strengthen economic growth? This question of whether procyclical fiscal policies are harmful or not to growth will be addressed in the second stage of analysis of this paper.

Table of Figures4.4: fiscal policy's degradation: counter to acyclical



Presented are some of the results from our dataset of 45 Sub-Saharan African countries. Now I will be investigating the procyclicality of other fiscal variables such as government investment and government consumption. This will allow us to see in detail which part of government expenses is more pro or countercyclical.

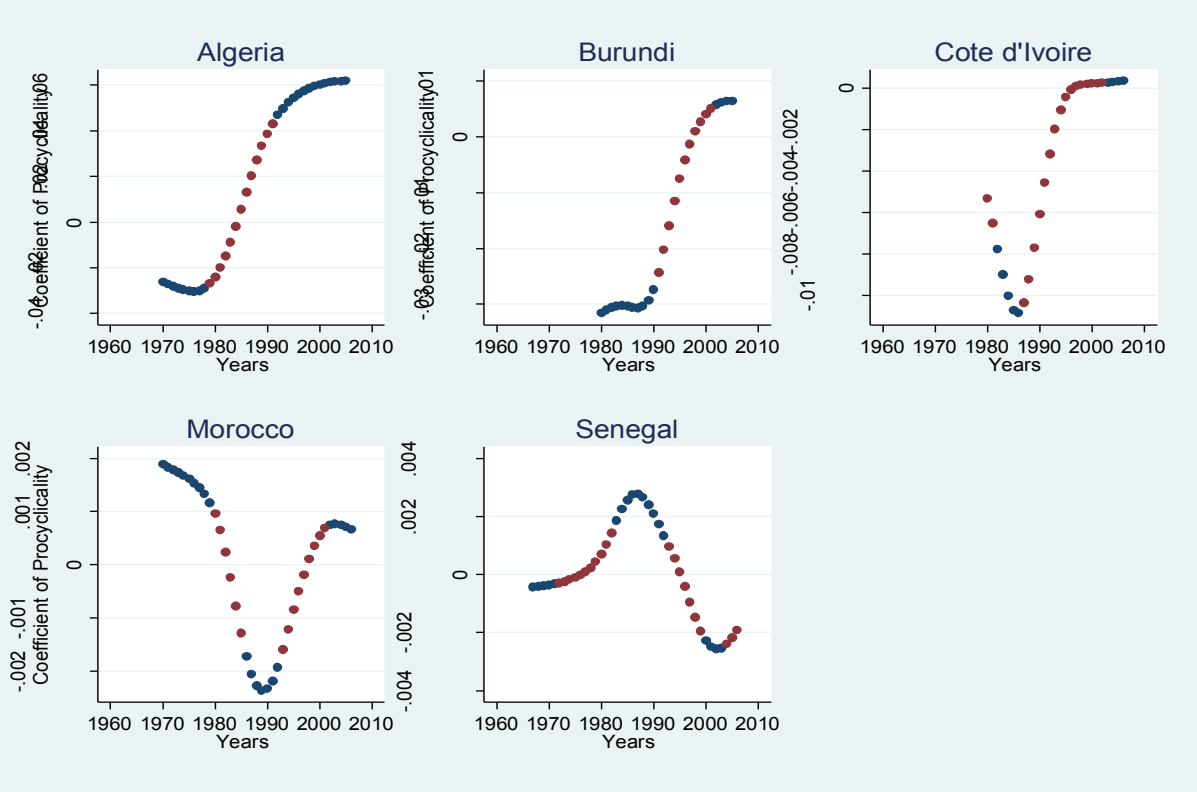
4.4.4 The Government Investment

Public investments variable used here is the general government GDFI in constant USD. The first set of diagrams shows some countries which initially began with countercyclical public investments but ended with strong procyclical policies. For instance in Algeria, Morocco and Burundi where public investment ends up being positively related to business cycles. A possible explanation for this behaviour could be that the period immediately after 1960 was characterized by "compulsory" investments whatever the economic cycle (good or bad), since countries needed to build up. Thereafter, and when the "necessary" public goods were provided, public authorities started purchasing investment goods only when a financial windfall occurred.

For other economies (Tables of Figures 4.5) also, the situation changes toward more procyclical investment policies. For Central Africa, Egypt, Gambia and Togo the data shows insensitivity at the beginning and strong procyclical investments in recent years. Other governments (Tanzania, Gabon, Ghana and Kenya) have almost constantly pursued procyclical investment policies.

In Table of Figures 4.6, the results presented show countries with better policies, in other words, strong countercyclical behaviour for public investments. Indeed, in Benin, Guinea-Bissau and South Africa, investment seems to be used by authorities very "wisely". But if one looks more closely, the data shows that for Guinea Bissau (mainly) and Benin, during relative long periods, the output gap was negative (GDP growth under its potential level) and public authorities, in order to avoid the collapse of the economy, tried to keep a certain level of basic spending in capital formation. For South-Africa, an emerging country, this behaviour does not seem very surprising since from the data one can argue that investment has been a stabilizing tool used to bail out the economy in bad times and reduced during booms.

Table of Figures4.5: Procyclicality of Government Investment



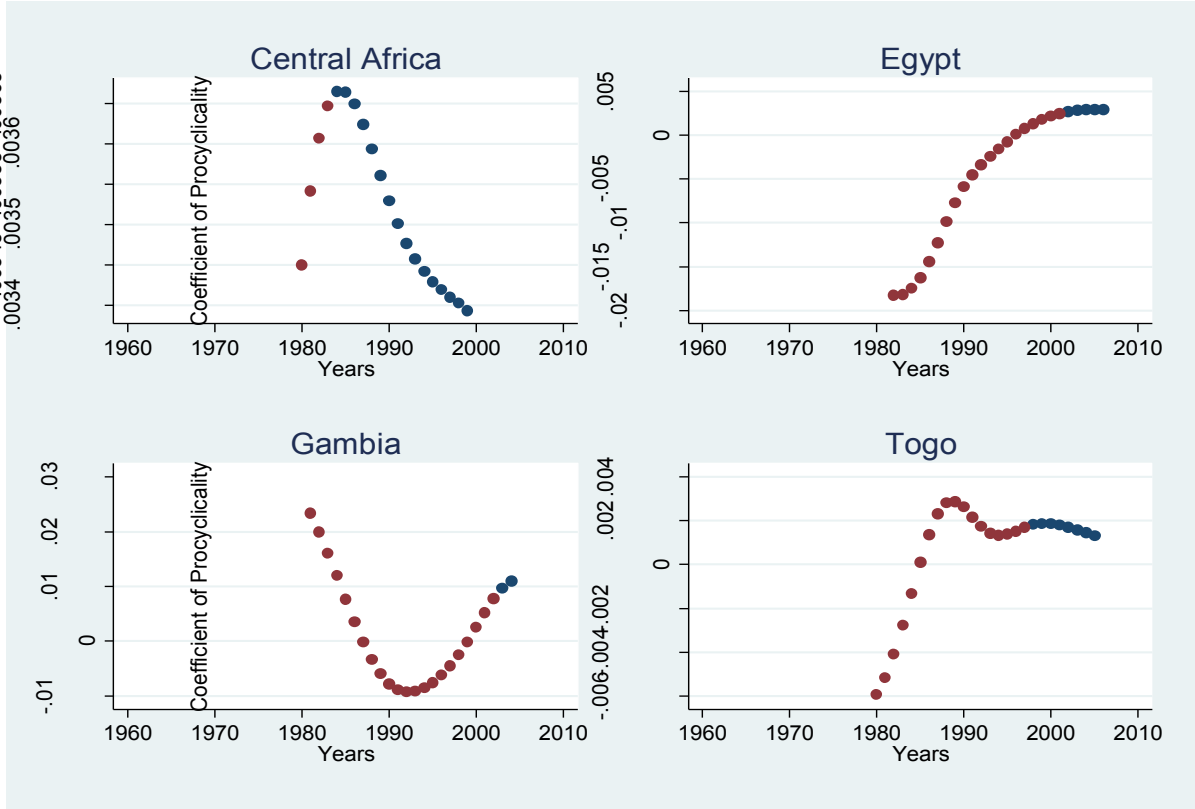
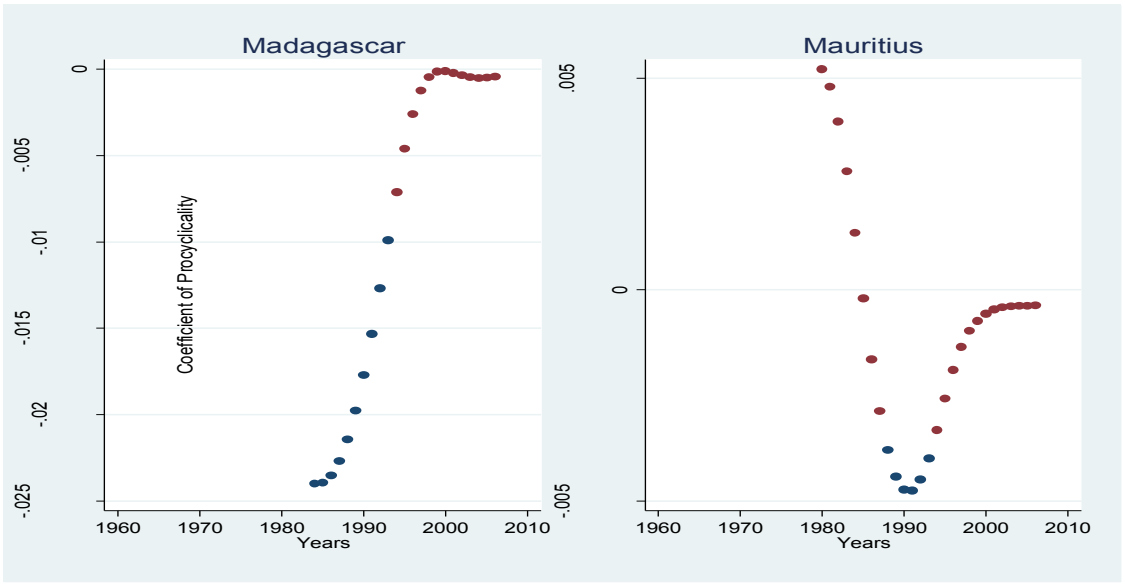


Table of Figures4.5: Procyclicality of Government Investment



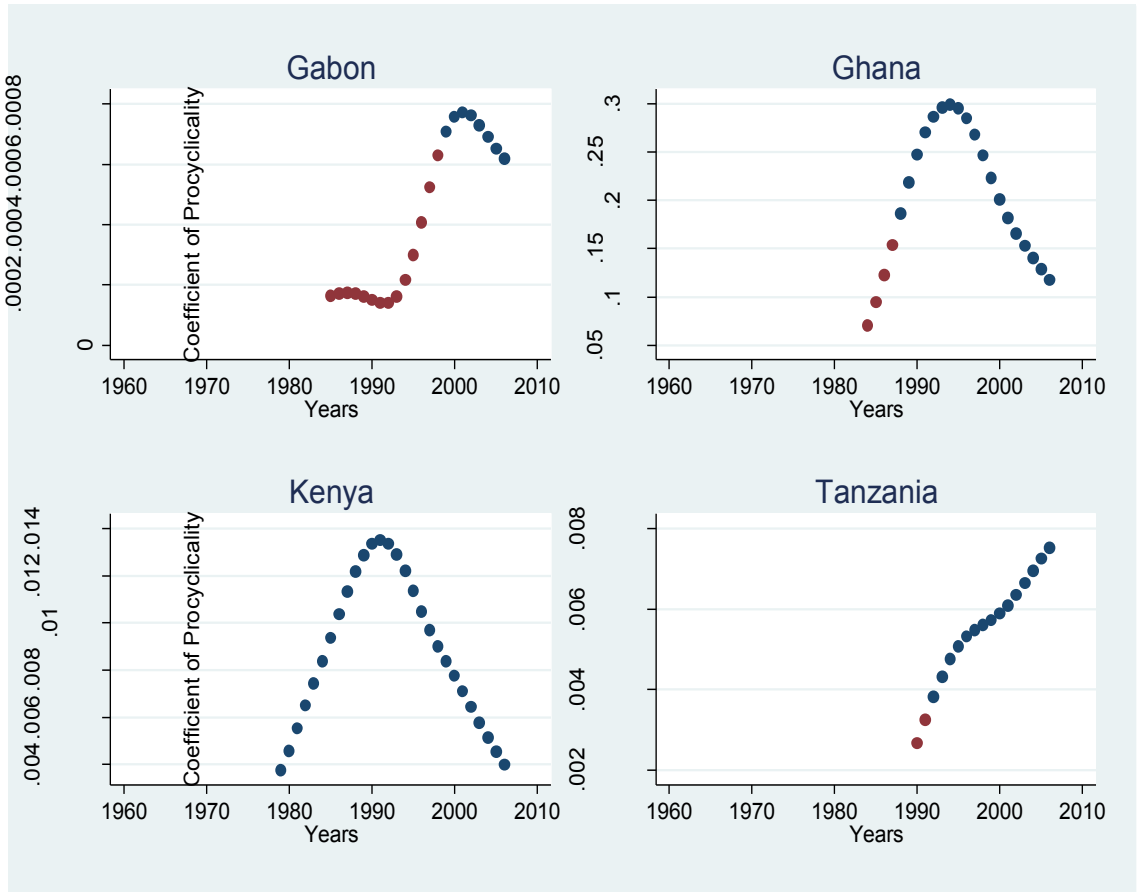
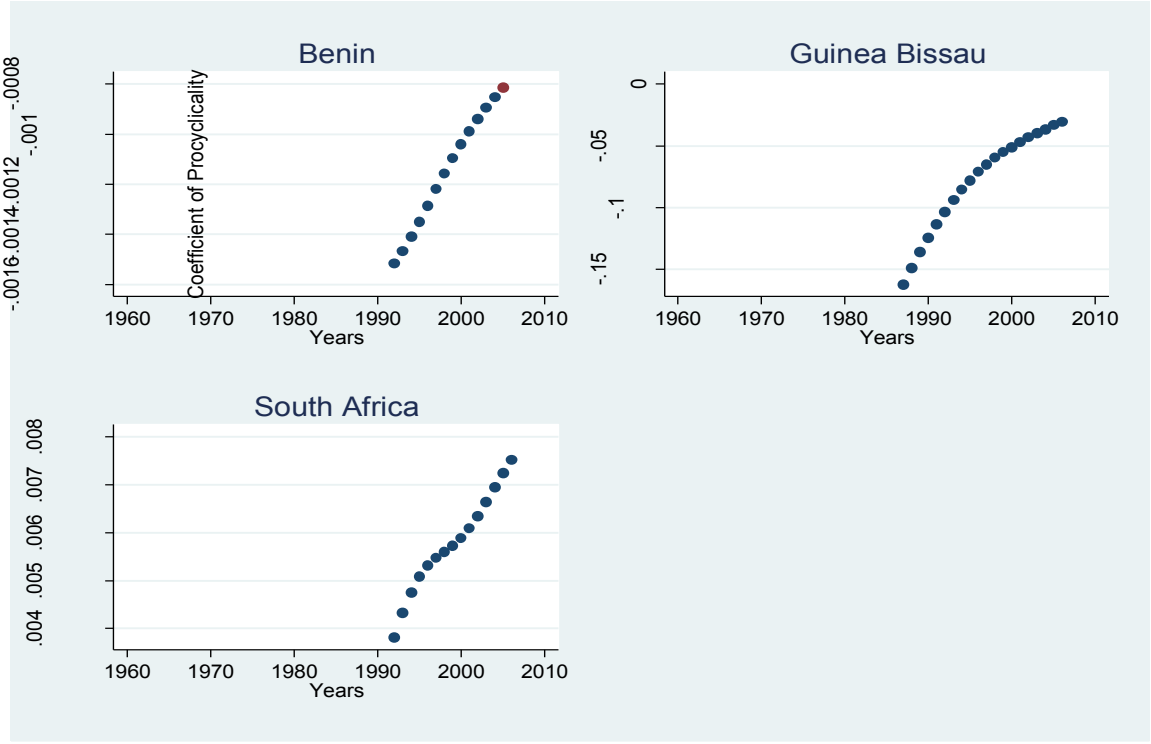


Table of Figures6: Procyclicality of Government Investment (usual countercyclical countries).



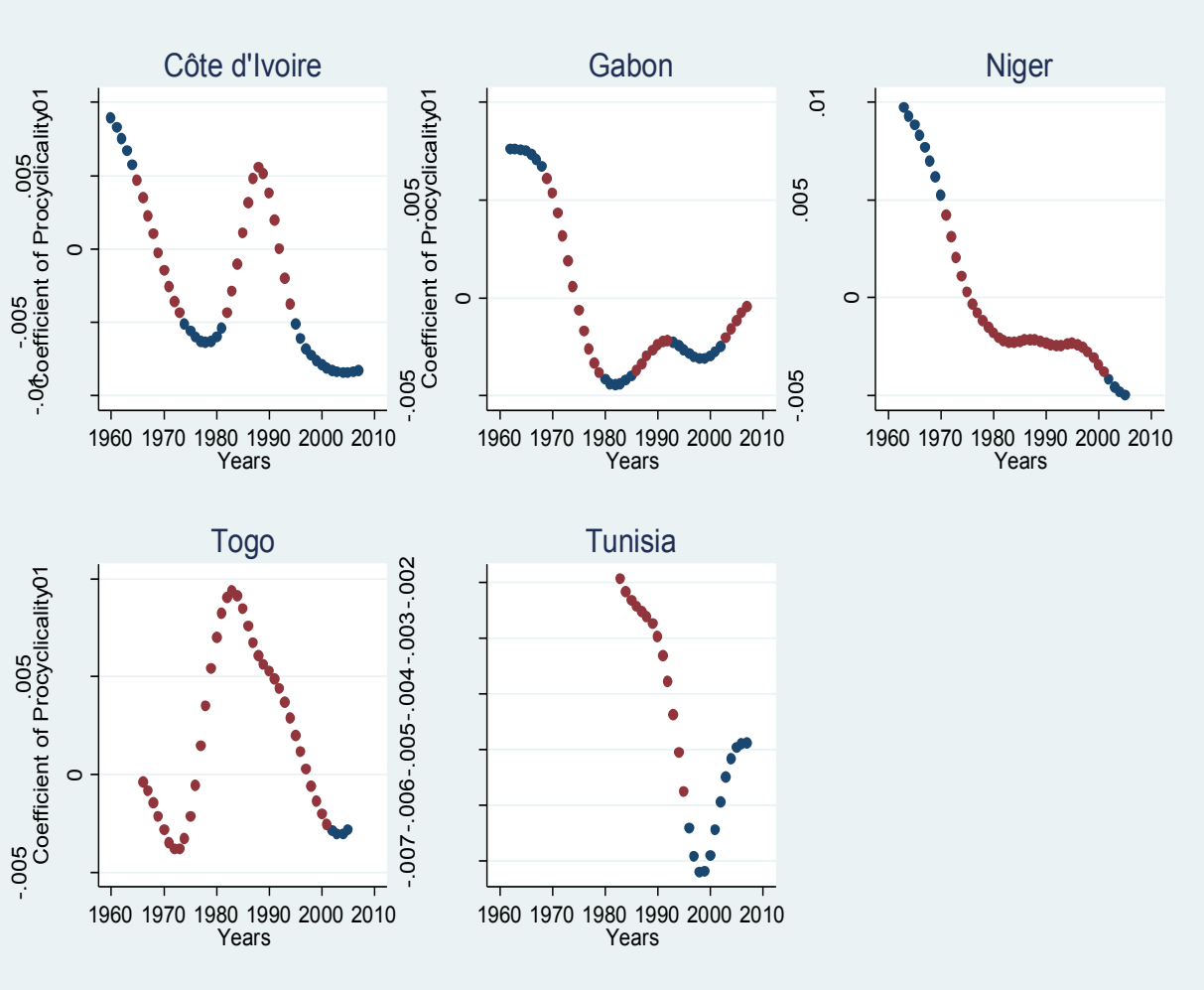
Next I will investigate the cyclical behaviour of general government final expenses including purchases of goods and services, and compensation of employees.

4.4.5 The Government Consumption and Social Spending

As said above, here I will focus on government (non capital) spending cyclical characteristics and run a comparison with results from public investment. However I expect a higher countercyclicality from government non capital spending to investment. Government consumption variables include purchases of goods and services, compensation of public servants. Additional to that and based on IMF (2010), this variable is called "pro-poor spending" because it incorporates expenses on health and

education. Therefore any reduction in pro-poor spending would undermine decades of the poverty reduction battle and the attainment of the millennium development goals. Consequently it seems rational for African countries that any budgetary arbitrage should be done in favour of "pro-poor" spending. The results are presented in Table of Figures 4.7. This table shows that public consumption and social spending have been highly countercyclical in Tunisia, Côte d'Ivoire, Niger and Togo in recent period (just before and during the 2009 economic downturn). For Gabon, for instance, the situation is slightly different since one observes an acyclical behaviour in our data, while IMF 2010 argues that policies were efficiently conducted in that country during the crisis.

Table of Figures 4.7: Procyclicality of Government Consumption



More than half the total sample of countries previously pursuing procyclical public consumption policies started in early 2000 implementing a new regime where consumptions were at least disconnected from the business cycle (Table Figure A.4.1).

Table A.4.1 presents a comparison between public investment and consumption cyclical walk for some countries. As IMF 2010 underlines, government expenditures have been more countercyclical than public investment in the sample as a whole, but this picture hides an important heterogeneity. The trend in recent years (from 2000) has shown that the majority of middle income countries have run countercyclical public consumption or at least things have been acyclical. Except for Algeria, all other middle-income economies steadily evolve toward more acyclical then countercyclical public spending policies as in the case of Botswana, Mauritius Egypt and South-Africa. On the investment side the situation does not change for Algeria which still keeps a procyclical stance, and Egypt also running the same policy. Apart from these two countries, South-Africa, Botswana and Tunisia improved their investment policies. The picture is neither clear cut in low income and fragile African states. However as a whole, the sample shows that public expenditures (pro-poor spending) has been the main tool for African countries to fight recessions during the 2000s. Only four countries (Algeria, Burundi, Guinea Bissau and Morocco) out of twenty three have left spending moving in same direction as changes in output gap.

These results underline two important facts. First, the one "size fits all" from previous studies is no longer relevant since substantial disparities exist among African economies. Second, the general tendency is to run "wise" fiscal policies among African countries (mainly for Sub-Saharan economies), therefore the situation described by Thornton (2008) (where fiscal policies in developing countries were strongly procyclical and inefficient to stabilize the economy) seems to have come to an end. International Organizations such as IMF also share the same analysis arguing that, based on the latest data available, fiscal policies during the crisis (in 2009) have indeed been countercyclical and pro-poor spending has been protected. To a large extent, this reflects the stronger fiscal positions in most countries heading into the crisis, and the availability of additional external financing. The rising trend in health and education expenditures especially has not been interrupted during the recent economic downturns. A growing number of

countries have put in place cash transfers, which have good targeting mechanisms and typically offer high impact at low cost. And an increasing number of countries are taking a more developmental approach to social protection, focusing on public works, and food security, especially through agricultural input subsidies (IMF 2010).

The second part in this first stage analysis will focus on Latin American countries. Even if their structures are quite different, this analysis will give a benchmark on the relative performance between the groups of developing economies.

Table 4.1: Comparison for Sample Countries

Country	Government Investment	Public Consumption
Algeria	Procyclical	Procyclical
Botswana	(previously procyclical) Acyclical	Acyclical
Benin	Countercyclical	Acyclical
Burundi	(previously countercyclical) procyclical	Procyclical
Cameroon	Acyclical	Acyclical
Central African Republic	Procyclical	
Côte d'Ivoire	(previously countercyclical) procyclical	Countercyclical
Egypt	Procyclical	Acyclical
Gabon	Procyclical	Countercyclical
Gambia	Procyclical	Procyclical then Acyclical
Ghana	Procyclical	Procyclical then Acyclical
Guinea Bissau	Countercyclical	Procyclical
Kenya	Procyclical	Procyclical then Acyclical
Madagascar	Countercyclical then Acyclical	Acyclical
Mali	Acyclical	Acyclical
Mauritius	Countercyclical then Acyclical	Acyclical
Morocco	Procyclical, Countercyclical then Procyclical	Procyclical
Niger	Acyclical	Countercyclical
Senegal	Procyclical then Acyclical	Acyclical
South Africa	Countercyclical	Acyclical
Swaziland	Acyclical	Procyclical then Acyclical
Tanzania	Procyclical	Acyclical
Togo	Procyclical	Countercyclical
Tunisia	Procyclical then Acyclical	Countercyclical

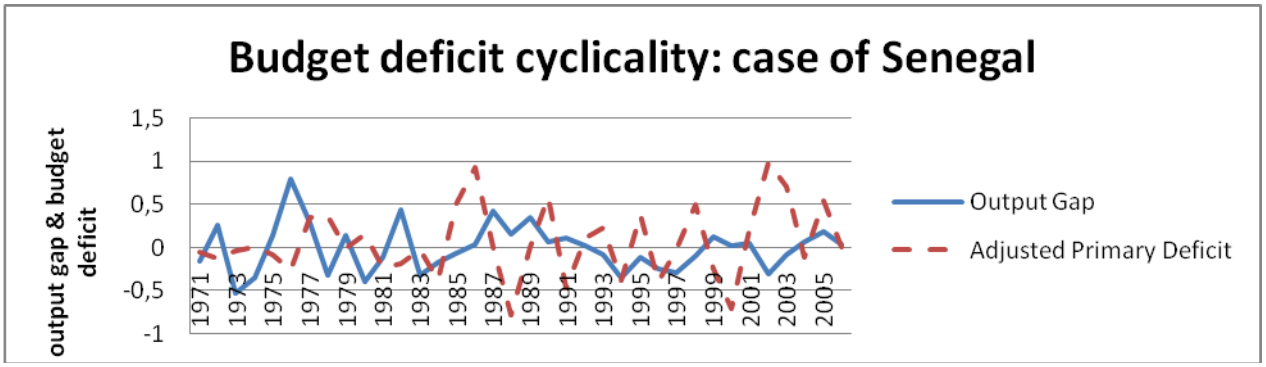
STUDY CASE 1: Procyclicality of Fiscal Policy in Senegal

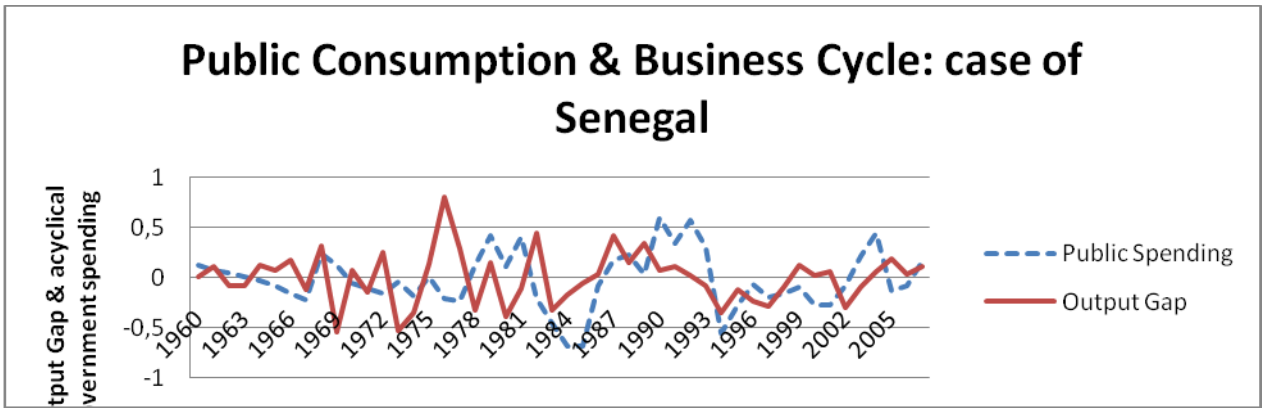
The diagram below show that Senegalese budget balance have been quite countercyclical in recent years, compared to the situation in the early 1960s until mid-1990s (if one considers budget deficit, countercyclical policies appear more evidently during early 2000s) where public spending (and the budget balance itself) simply followed the business cycle. This means that policy makers are getting "fiscally wiser" Beyond the political economy arguments explaining this change other possible reasons are more related to the change in international economic orientations. Some details are given in flowing lines.

1 Senegalese government has learnt from the past: the late 1980s and mid-1990 (especially in 1988 and 1994) have seen violent social unrests in the country. Of course there were other causes than economic but the situation in the real economy played an important role. For instance while the country was running poor economic performance in 1993, with a negative output growth (around -2%), general government final consumption expenditures declined. Therefore the procyclical public policies exacerbate the economic downturn and feeded violent riots in the capital Dakar in February 1994.

2 Improved situation for public finance: had given enough room for Senegalese government to steadily run less procyclical policies. Indeed with a lighter debt burden (thanks to poverty relief programs) and favorable global economic environment, government was able to improve its fiscal stance.

3 During 1980s policies implemented to sort out the country's debt crisis did give a little attention to social sectors. Indeed while improving macroeconomic aggregates, structural adjustment programs ended up with important negative social effects. That is what poverty reduction programs are aimed at amending. Therefore, more recently, during economic downturn (idiosyncratic or global crisis) the country receives financial as well as "political" support from partners to keep at least social spending unchanged. That was the situation during the last global crisis in 2008 when IMF & WB encouraged (and give support) low income countries to keep unchanged "sensitive" spending.





Year	1990	1991	1992	1993	1994	1995	1996
General government final consumption expenditure (constant USD, billions)	0,54657173	0,53854874	0,5398254	0,53259239	0,51301194	0,51712061	0,52805213
GDP per capita growth (annual %)	3,4896325	-0,3100542	1,55171584	-1,46561308	2,72595116	2,5265245	-0,71984006

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
External Debt, total (FCFA, Billions)	**2171,7**	**2418,9**	**2540,1**	**2294,9**	**2024,7**	**1864,6**	**1944,1**	**864,4**	**968,5**

4.5 The Results from first step regressions: Latin American Countries

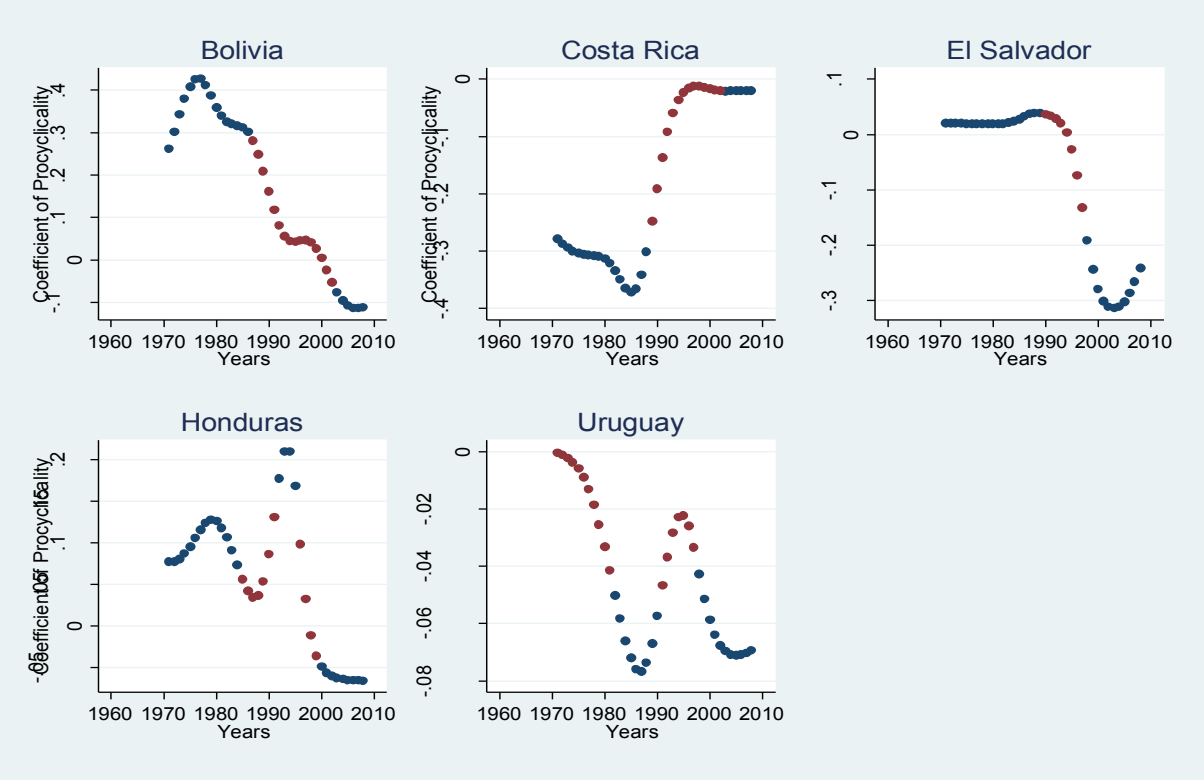
For sub-American economies the same method will be used, as in equation (1). The adjusted primary deficit is also computed as in equation (2), and identical control variables are introduced. The results are presented below.

Countries present in Set of Figures 4.8 (and 4.9) have undertaken good fiscal policy responses during recessions. Bolivia, Uruguay, Costa Rica and El Salvador have indeed steadily implemented countercyclical fiscal policies since discretionary fiscal actions go up when actual output is significantly lower than its potential level. The greatest achievement was performed by Honduras which pursued procyclical policies from 1971 to 1995 and changed it all in 2000. Up to this point one important and trivial stylized fact is observed: any change in the fiscal regime is preceded by a period where fiscal variables are disconnected from output variations. Therefore one can reasonably imagine that Argentina, Chile and Ecuador in coming years will have better fiscal policies, since they seem to have given up procyclical responses to short term negative shocks on real economy.

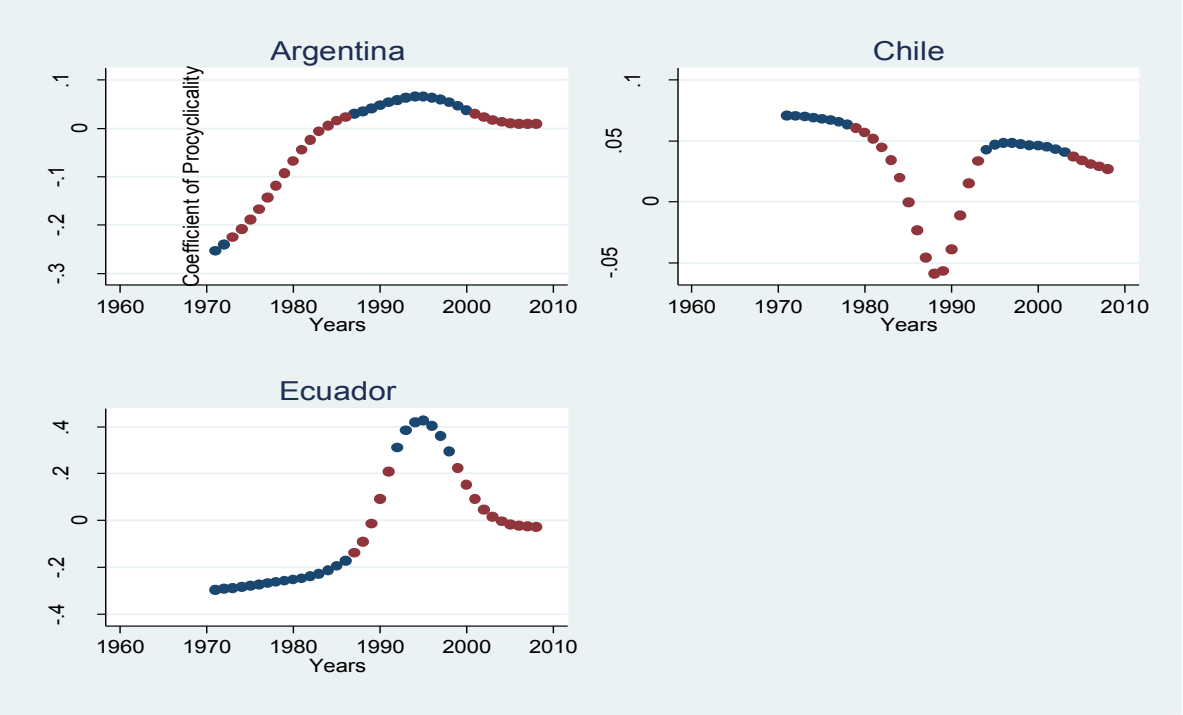
More interesting and more challenging results are shown in Set of Figures 4.10. Brazil, Colombia, Peru and Venezuela have all been keeping strong procyclical fiscal policies since the early 1990s (except for Peru). This situation is difficult to interpret because most Latin American countries had very good fiscal positions from 2000 up to 2009. The commodity prices boom in 2006-2007 contributed to improve the Latin American fiscal balance (as much as economic cycles according to Daude & al. 2010). So that in 2008, at the onset of the crisis, adjusted primary balances were in equilibrium or surplus in a majority of countries; for instance there were surpluses in Peru, Brazil, Colombia, Uruguay, and Costa-Rica. Despite this excellent fiscal shape, why do some of them run procyclical policies? Several answers have been given in the literature. The first reason is historical, indeed since early 1990s fiscal policy has been procyclical in many Latin American countries (Argentina, Brazil, Costa-Rica, Mexico etc.). The procyclicality during this period was mainly driven by the deep crises, but these practices continued throughout

the 2000s (De Mello & al. 2006), though countries like Costa-Rica, Honduras, El Salvador and Uruguay ended this dynamic in the early 2000s.

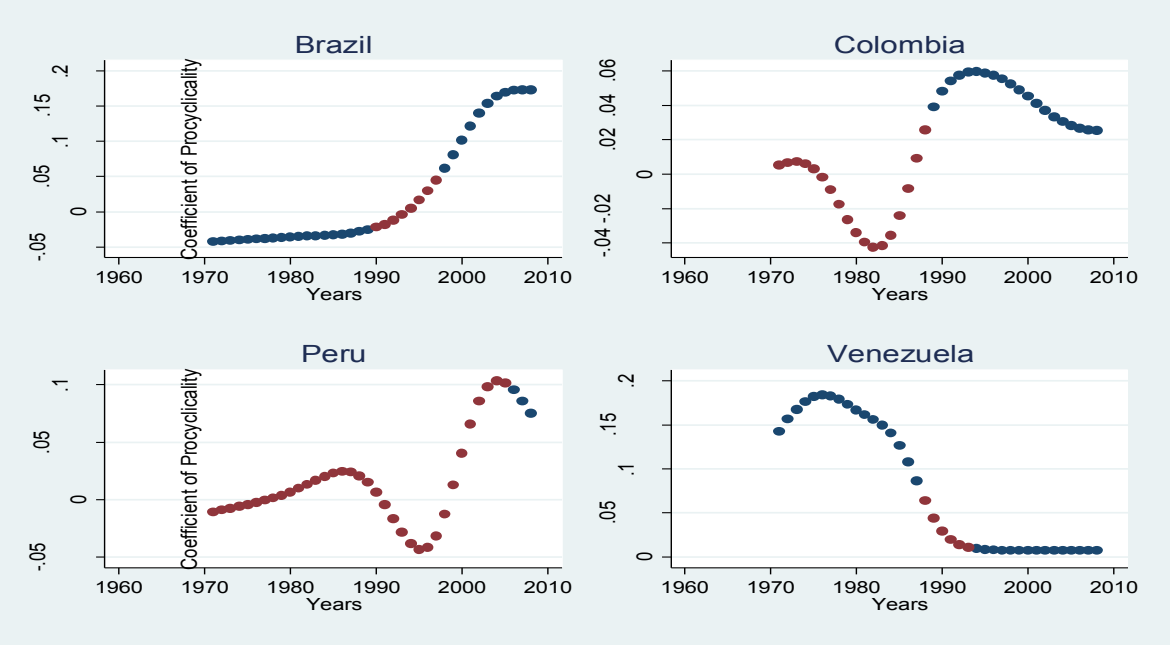
Set of Figures 4.8: Adjusted fiscal deficit procyclicality



Set of Figures 4.9: Adjusted fiscal deficit procyclicality



Set of figures 4.10: Adjusted fiscal deficit procyclicality



Another explanation for such fiscal stance is the size of automatic stabilizers in Sub-American economies. It is well known that with significant automatic stabilizers, discretionary measures needed to stabilize the economy will be less important than in the situation where one has weak automatic responses[74]. Therefore, important discretionary measures are unnecessary since the automatic response of fiscal primary deficit is enough to curb the recession. Additional to these facts, EMEs and especially Sub-American ones were among the first to start recovering from recession, owing to current surplus, low debt levels, strong monetary policies (inflation targeting), and important capital inflows that helped prompt recovery.

As it was done for African countries, similar benchmark estimations for government investment and government consumption will be made.

4.5.1 The Government Investment

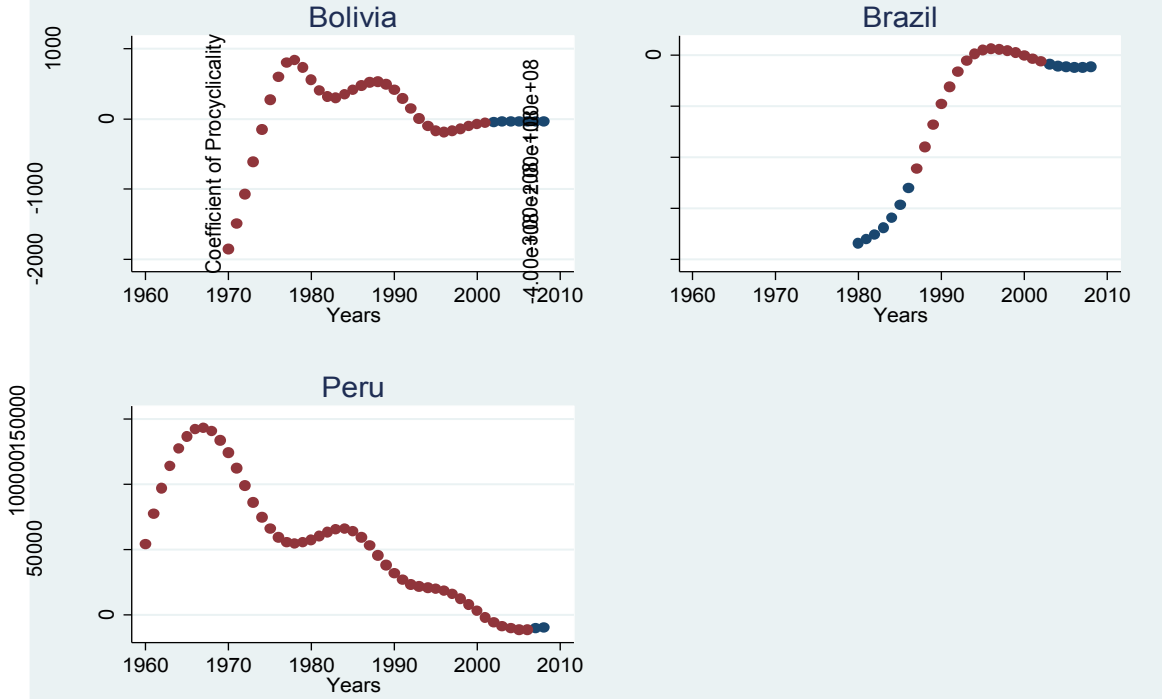
Due to the nature of our database, the gross fixed capital formation will be used as a proxy for public investments (in real US dollars).

On the investment side, Bolivia and Peru are characterized by a change, at the end of 1990s, in their investment policies, spending more in periods of economic downturn. However in Brazil the investment policy after a long period of acyclicality has recently (in 2003) become quite countercyclical. In the remaining countries for which data on public investment is available, the situation is split in two. In the Set of Figures 4.11, capital spending is strongly procyclical especially for Uruguay and Costa-Rica. Venezuela, if one refers to the stylized fact presented earlier, is engaging a new dynamic and I expect in the medium term that this country will be using capital expenditures as a stabilizing tool. For the remaining countries, presented in Table Figure A.4.2, investment is just not responding to any change in output gap.

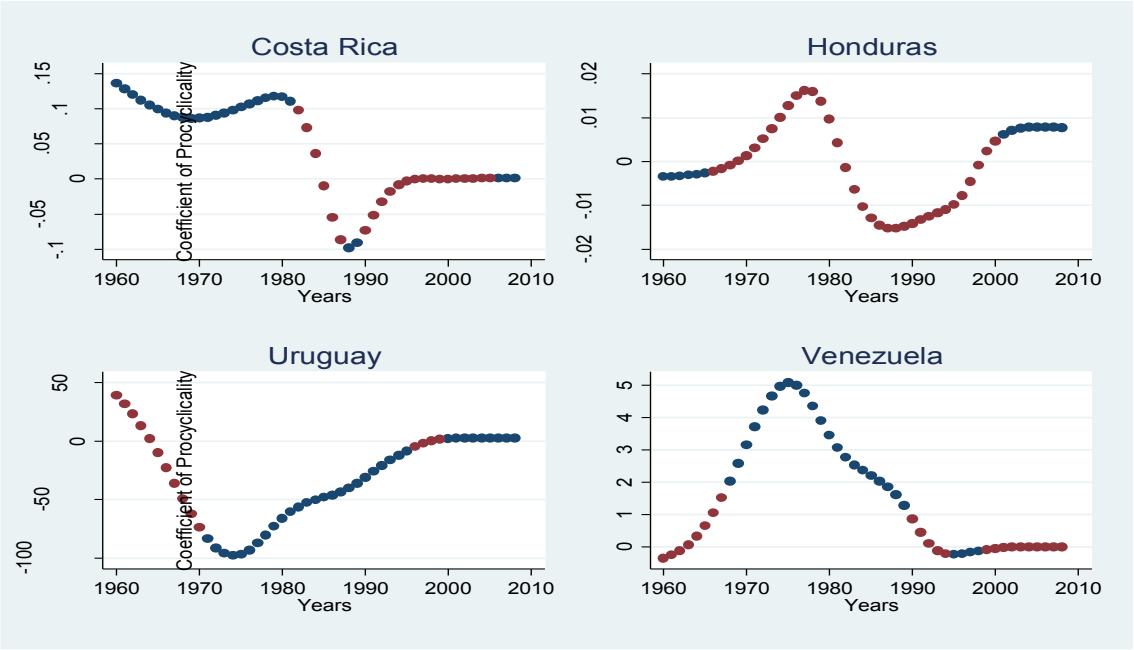
[74] Primary budget balances have an automatic response of 0.21 percentage points of GDP for each output gap in the region (Daude & al. 2010).

The next analysis will focus on the cyclical nature of government final consumption expenditure.

Set of Figures 4.11: Procyclicality of government investment (strong countercyclical)



Set of Figures 4.11: Procyclicality of government investment (strong procyclical)



4.5.2 The Government consumption and social spending

General government final consumption expenditure (from WDI database) is used here as a proxy for government. It includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditure on national defence and security, but excludes government military expenditures that are part of government capital formation.

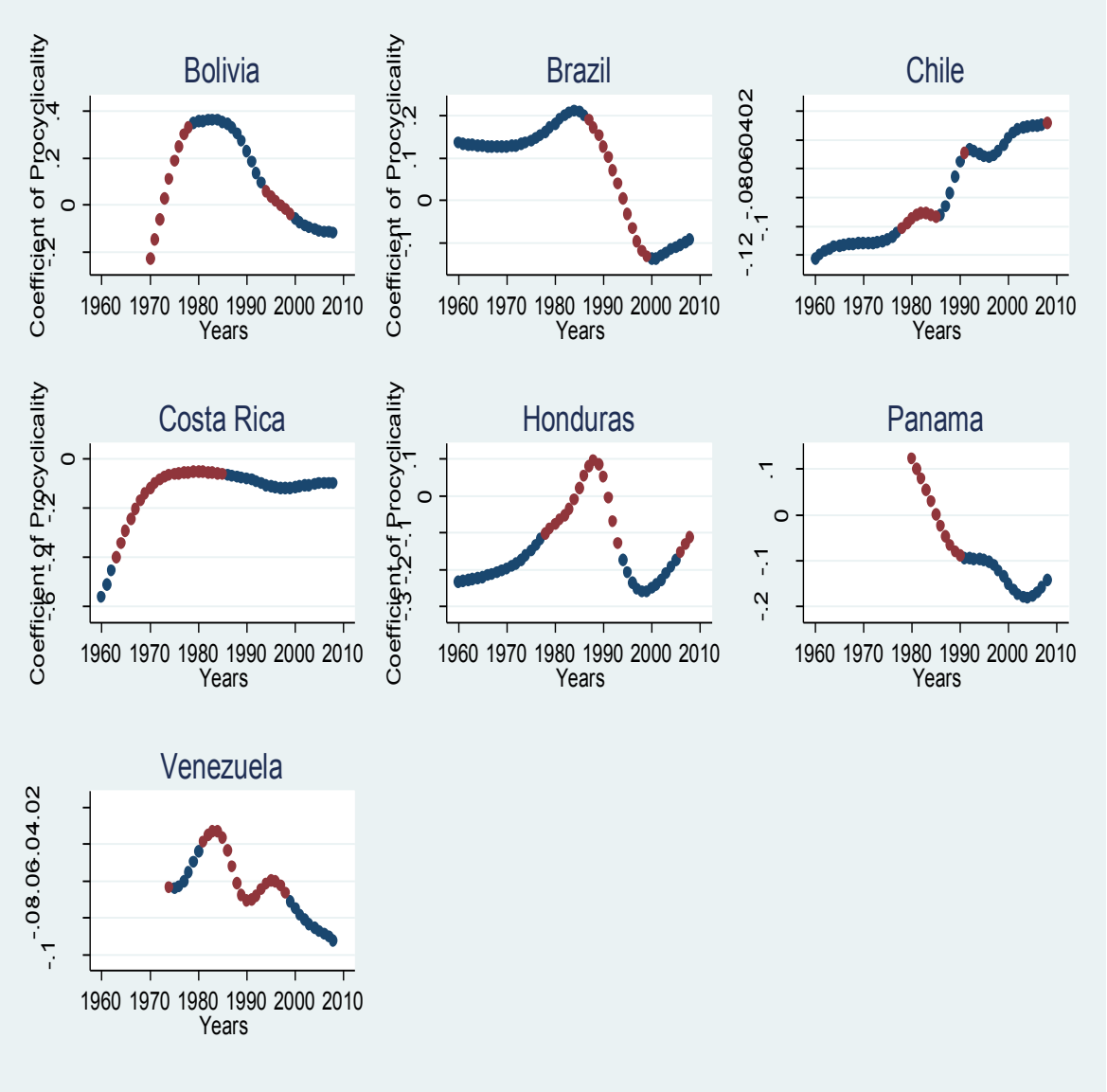
Some Latin American countries are characterized by relatively strong countercyclical public consumption. Indeed Brazil, Bolivia, Chile, Costa-Rica, Panama and Venezuela governments use their consumption as a stabilizing tool (Set of Figures 4.12). Further analysis is necessary in order to explain why there seems to be a contradiction between public consumption and the procyclical nature of fiscal deficit. But as said earlier, automatic stabilizers are very effective in these economies. Moreover, and according to Daude & al. 2010, personal income taxes, without any discretionary action, are highly responsive to change in output gap. Therefore, despite a countercyclical use of

government spending in some countries, the automatic stabilizers effects seem to have higher effects on real economy than discretionary measures.

Other countries, in Table Figure A.4.3, present acyclical or procyclical public consumption policies in recent periods (late 1990s).

A brief comparison between Latin American and African countries shows that the latter are increasingly implementing countercyclical fiscal policies while budget deficit is more procyclical in developing Latin America. The two different behaviours can be easily explained by the tax bases. Indeed Sub-American countries (e.g. Brazil) have a relative wider personal income tax base compared to African countries (especially Sub-Saharan ones) where tax collection is more challenging and relies on fewer contributors. Therefore the only way to significantly stabilize the economic activity would be through discretionary fiscal actions. Inversely for small recessions, Latin American countries might only let automatic movements of taxes regulate the economic activity.

Set of Figures 4.12: Procyclicality of government investment (countercyclical)



4.6 Second Stage Regression: Is Procyclicality of Fiscal Policy always and everywhere bad?

In this section I cover an area that has not been dealt with for developing countries and in which the question is raised as to whether procyclical fiscal policies are bad for economic activity, always and everywhere. It is imaginable that a government decides to run procyclical fiscal policies in periods of economic bonanza in order to support and strengthen GDP growth. On the other hand, as fully explained in the literature, procyclical fiscal policy increases the vulnerability toward shocks since public authorities will not have enough financial resources to cover loss of tax revenues or even increase its spending to support inactivity during recessions. To shed light on such possible effects, I regress a measure for GDP volatility on output gap coefficients from earlier time series estimations (called "coefficients of procyclicality). If there is a clear positive effect of coefficients of procyclicality on output volatility, one could be able to conclude at least that procyclical fiscal policy induces higher volatility for growth and this could discourage private entrepreneurship and investment.

Aghion & Marinescu (2007) did a similar analysis on OECD countries but they used first difference of the log of real GDP per capita. For developing economies, it might be more relevant to use output volatility since these countries are more vulnerable to volatility (Loayza & al. 2007). As Loayza & al. (2007) underline, "volatility entails a direct welfare cost for risk-averse individuals, as well as an indirect one through its adverse effect on income growth and development".

4.6.1 Empirical Specification and Results

The empirical specification is as follow:

$$Variance(Y_{it}) = \alpha + \alpha_2 \beta_{1it} + \alpha_3 control\ \mathrm{var}_{it} + \varepsilon_{it}$$

The dependent variable is the variance of real output. β_{1it} is the coefficients obtained from first stage estimation and they are compiled to form a panel dataset. $control\ \mathrm{var}_{it}$ is a set of control variables that are introduced. Current account balance is still here to control for possible current account targeting, inflation, lagged GDP and investment over GDP are also considered.

4.6.1.1 The results from African countries database

Table 4.13 column-1 presents the results from a simple OLS estimation with a set of control variables representing the most widely used in similar analysis (e.g. Aghion & Marinescu 2007). Also I use country-year fixed effects in order to control for specific characteristics for each country even if they share similar levels of development or are in the same region. One observes here that the positive and statistically significant relationship between the coefficients of procyclicality and output volatility suggests that countercyclical fiscal deficit is an efficient stabilizing tool. Indeed countercyclical fiscal deficit impacts positively on growth (here it reduces its volatility) in that it can help reduce the negative effect that negative liquidity shocks impose on credit-constrained firms that invest in R&D and innovation (Aghion & Marinescu 2007).

The sign of other control variables are as expected. For instance, better current account balance is growth enhancing and reduces volatility. Inflation and the lagged output also are as expected. However this first estimation might suffer from an endogeneity bias with output

growth that could affect the cyclical coefficient and vice-versa. Furthermore, the lagged value for real GDP per capita might be endogenous and correlated to the error term.

To address such possible source of bias I will use the GMM system method which allows us to control for possible endogeneity bias by using lagged values as instruments. Results are presented in Table 4.13 column-2. Despite our concerns about possible endogeneity the results are quite trustworthy compared to those of OLS.

Table 4.13: Effects of Fiscal policy procyclicality on Growth volatility

VARIABLES	FE variance	GMM System variance
cdeficit_acycygap	0.145**	0.168**
	(0.0634)	(0.0752)
curr_acc_real	-2.06e-06	-1.10e-06**
	(8.89e-06)	(4.33e-07)
inflation	0.00133**	0.00169***
	(0.000615)	(0.000398)
lag_gdp	0.000855***	-0.000284***
	(9.45e-05)	(1.59e-05)
invest	-1.75e-06	-1.97e-06***
	(1.15e-05)	(4.10e-07)
gdp_cap_real		0.00120***
		(3.17e-05)
Constant	37.56***	37.36***
	(0.131)	(0.0952)
Observations	740	740
R-squared	0.112	
Number of fixed_id_year	33	
Number of id		37

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Procyclical fiscal policy still negatively and statistically significantly affects growth through higher volatility. This shows that the endogeneity issue did not affect our results that much.

The second step of estimation is also done for Latin American countries to see whether the impact is the same as for African economies.

4.6.1.2 Effects of Fiscal Procyclicality for Latin American Countries

Results from OLS estimations on Table 4.14 column1 denote that more procyclical fiscal policy induces higher output volatility in developing South-American countries. When discretionary fiscal measures are considered alone, it is quite logical to obtain such negative impact on growth, but if linked to previous analysis the impact might not be that large. Indeed, automatic stabilizers are said to be relatively important in Latin American countries, therefore the real effect of procyclical discretionary measures on output volatility will be less important. When we move from column-1 to column-2 (from an OLS to a GMM estimation where I check for possible endogeneity of the coefficient of procyclicality), the variable of interest becomes statistically significant only at 10%, where it was at 5% in the OLS estimations. Also one has to notice that, despite a very small coefficient, current account balance positively impacts on output volatility. Compared to results for African economies this is a bit remarkable. Improvement of current account balance should mean that the economy becomes more competitive and production should increase and remain stable. But for Latin American countries, this result might be explained by the repetitive crises caused by unsustainable current account balance and speculative capital inflows (refer to chapter 2). Therefore, an increase in current account balance is "always" perceived by our data as a possible sign for potential future crisis especially for developing countries running a non-flexible exchange rate policy[75].

[75] Recently, during the autumn of 2009, Brazil decided to control capital inflows since it was running a higher current account balance and faced important capital inflows. Therefore to avoid real appreciation of the

Table 4.14: Effects of Fiscal policy procyclicality on Growth volatility

VARIABLES	(1) variance	(2) variance
L.variance		0.971***
		(0.0158)
Coefficient of Procyclicality	1.914**	1.393*
	(0.807)	(0.655)
curr_acc_real	1.24e-07	1.91e-07***
	(4.92e-07)	(3.78e-08)
lag_gdp	0***	-0***
	(0)	(0)
invest	-2.21e-07	-2.69e-07***
	(1.44e-07)	(6.75e-08)
gdp_cap		0***
		(0)
inflation	0.000221	-6.30e-06
	(0.000192)	(5.63e-05)
durable	-8.56e-05	
	(0.000259)	
Constant	42.11***	1.306*
	(0.138)	(0.673)
Observations	447	447
R-squared	0.073	
Number of fixed_id_year	38	
Number of id		15

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Brazilian Real and reduce vulnerability toward external shocks, public authorities introduced a tax of around 10% on portfolio investments.

4.7 Conclusion

A new preference in developing countries for less procyclical fiscal policies and more active and countercyclical budget measures is becoming apparent. For instance, most African countries have generally been using the budget deficit to stabilize their economies. Except for a few "outliers" (Rwanda, Sudan), countries are moving toward more countercyclical policies from either initially procyclical policies (Algeria, Central African Republic, Egypt etc.) or acyclical budget deficits (Cameroon, Ghana, Togo, Tunisia, Senegal etc.). The comparison between investment and public consumption shows that pro-poor spending has been more countercyclical. Indeed African economies, especially during the last global economic downturn, made all possible efforts to keep social expenditures unchanged or even increase them, as IMF (2010) reported it. This indicates a growing trend where developing African countries learn from previous painful experience when they were obliged to run restrictive fiscal policies in periods of negative output gap. The situation in other developing countries is quite similar but some differences remain.

Indeed large countries such as Brazil (as well as Colombia, Peru and Venezuela) were surprisingly running procyclical budget deficits. With responsive and large automatic stabilizers in these economies, lesser discretionary measures needed during recessions (or even procyclical fiscal policies can be run without any danger if automatic stabilizers are large enough). Other countries have been running (since the late 1990s) strong countercyclical fiscal policies (Bolivia, Costa-Rica, El Salvador, Honduras and Uruguay).

Developing countries should deploy all possible efforts to implement rigorous policies with their budget since it appears to be a strong factor for output stability. For developing African countries, procyclical fiscal policies have been associated with strong volatility of output while for Latin America this is still true but with a weaker significance.

Overall the paper demonstrates that for middle income and low income countries there is a trend toward countercyclical policies since the results show that it is an efficient tool to stabilize the real economy.

Despite such outcomes, fiscal policy alone is not enough to stabilize a whole economy. In addition, discretionary fiscal measures should be consistent with monetary policy stance. For instance, if in periods of recession government needs to borrow in order to support the economy, authorities should run loose monetary policy to make funds available for entrepreneurs and increase external competitiveness.

For a better efficiency, discretionary fiscal measures could be institutionalized similar to what is being done in the monetary policy area. Similar to inflation targeting rules, implementing a law regarding discretionary fiscal measures could strengthen the credibility of public authorities and increase budget efficiency. Even for countries with fiscal rules, discretionary measures still need to be clearly agreed upstream to avoid any rigidities. As the **Ter-Minassian (2010)** survey points out, "half of countries operating under fiscal rules did not modify or temporarily suspend them during the global crisis in 2008". This discretionary fiscal policy rule could also be a rampart against any deficit bias if it allows the measure to be implemented as soon as the output gap reaches a certain negative value.

ANNEXES CHAPTER 4

Table Figure A.4.1 : Procyclicality of Government consumption (sample of African Economies)

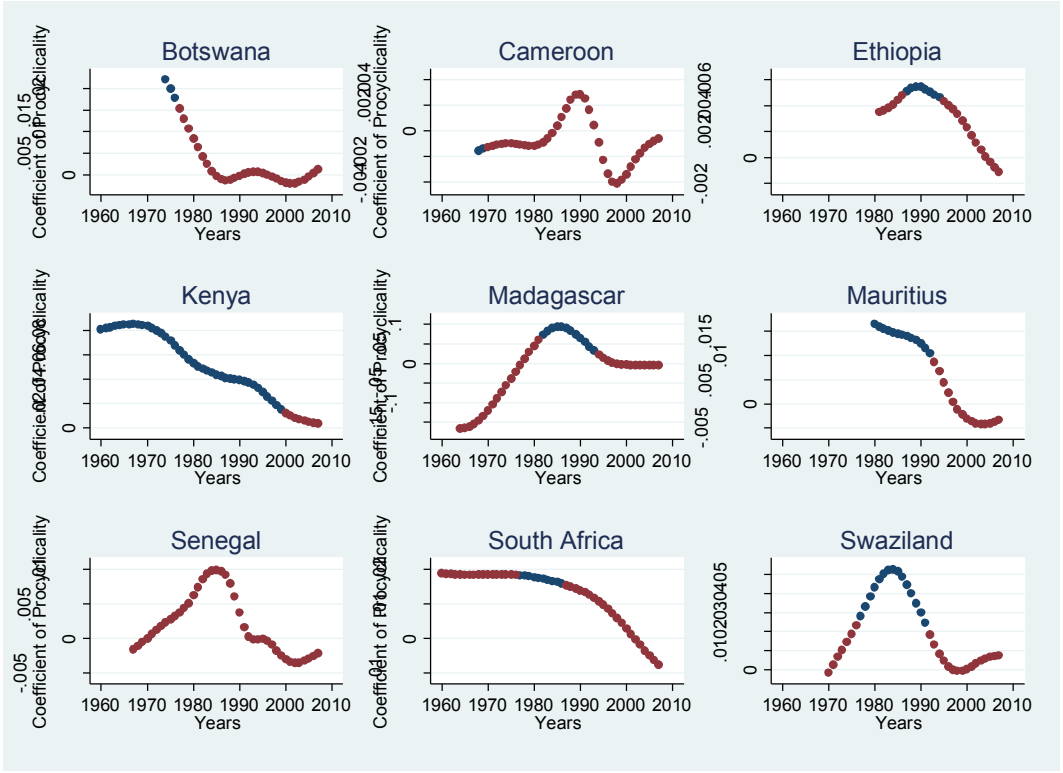


Table Figure A.4.2: Latin American procyclicality of public investment (acyclical policies)

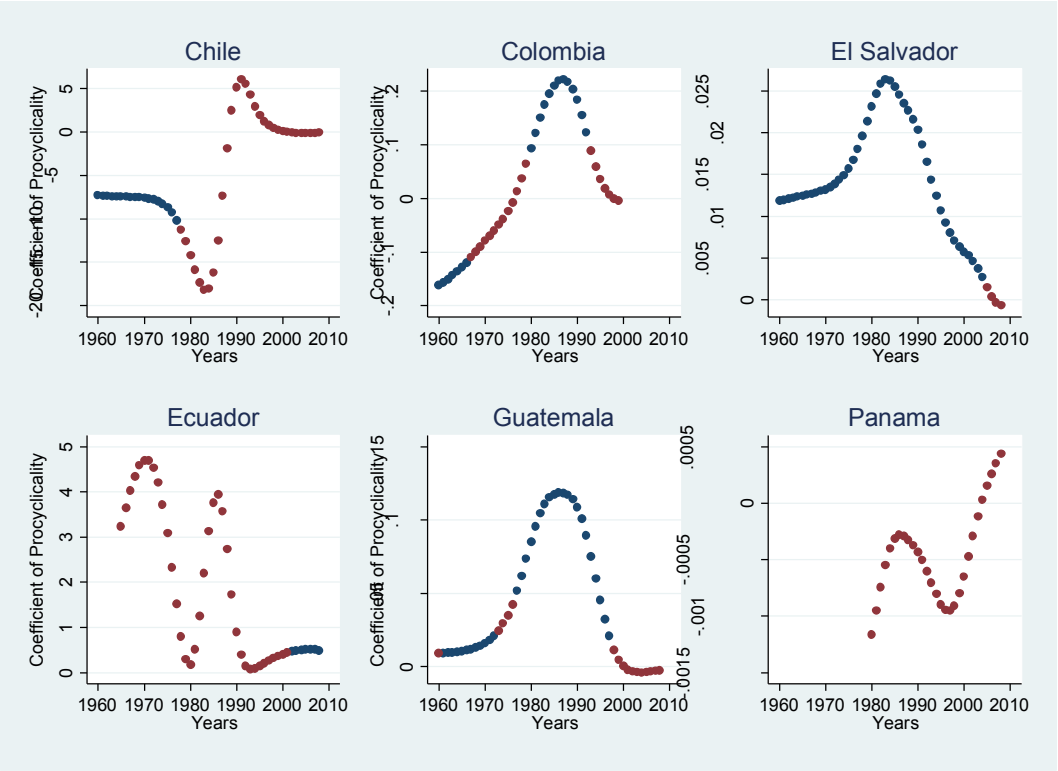
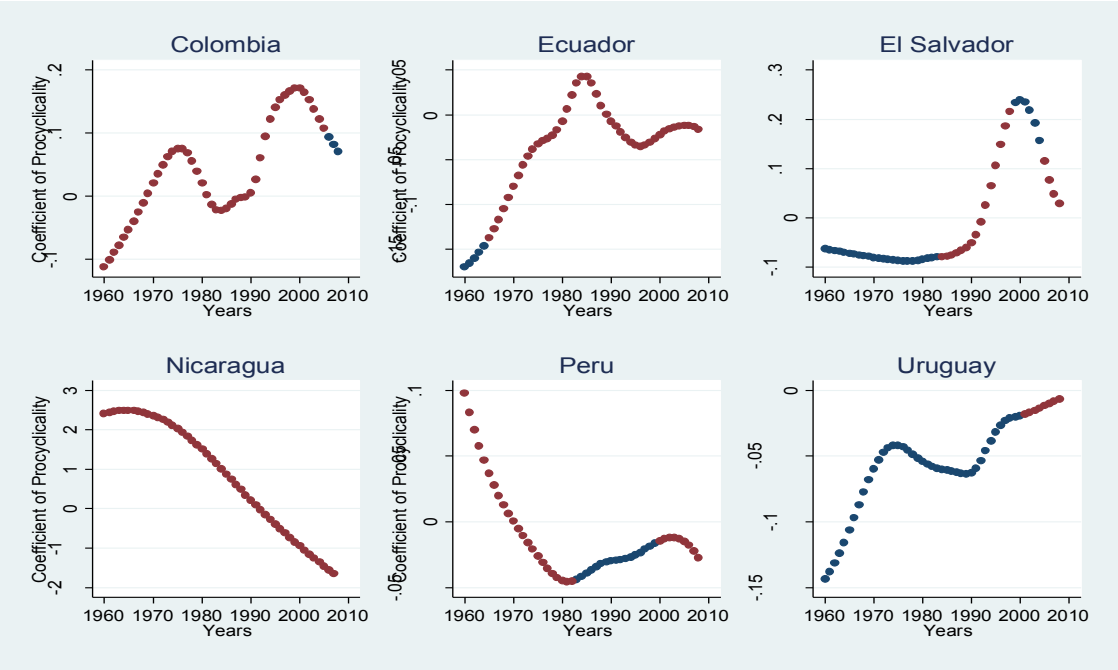


Table Figure A.4.3: Latin American procyclicality of public investment (acyclical policies)



List of variables

Variable		**Definition & Source**
Government investment		General government gross domestic investment (GDFI): i.e. gross fixed capital formation including all additions to the stocks of fixed assets (purchases and own-account capital formation), less any sales of second-hand and scrapped fixed assets, by central government. Source: World Bank
Government consumption and social spending		General government consumption including all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation. Source: World
General Government debt		External debt: consists of the outstanding stock or recognized, direct liabilities of the government to the rest of the world, generated in the past and scheduled to be extinguished by government operations in the future or to continue as perpetual debt. Source: World Bank
Inflation		Annual percentage change of the consumer price index Source: IFS-IMF
GDP_growth		Annual percentage growth rate of GDP per capita. Source: World Bank national accounts data.
Current account balance		The sum of net exports of goods, services, net income, and net current transfers. Source: BOP-Stats, IMF & World Bank.

List of countries

AFRICA

Algeria
Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Cape Verde
Central Africa
Chad
Comoros
Congo
Cote d'Ivoire
Djibouti
Egypt
Equatorial Guinea
Eritrea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea Bissau
Kenya
Lesotho
Madagascar
Malawi
Mali
Mauritania
Mauritius
Morocco
Mozambique
Namibia
Niger
Nigeria
RDC
Rwanda
Sao tome and principe
Senegal
South Africa
Sudan
Swaziland
Tanzania
Togo
Tunisia
Zambia
Zimbabwe

LATIN AMERICA

Argentina
Belize
Bolivia
Brazil
Chile
Colombia
Costa Rica
Ecuador
El Salvador
Guatemala
Honduras
Nicaragua
Panama
Peru
Suriname
Uruguay
Venezuela

General Conclusion

General Conclusion

In a global context of instability and scarcity of external financial resources tax revenues and public spending strategies needs to be highly efficient and effective in order to keep a sustained path of economic development. This dissertation discussed the effects of fiscal policies through three issues among the most important elements one has to understand in order to improve this political economy tool. The literature on fiscal policies in developing countries, for both emerging and low income economies, have often neglected several essential specificities while identifying some phenomenon and/or even considered that developing countries did not adapt their policies from past (crises) experiences. The current dissertation tried to shed light on fiscal policies effects by answering three questions and providing with policy recommendations: can developing countries reasonably use surprise policies to improve economic activity? In a globalized world, are the fiscal policies of developing economies' partners a real threat to the access to private funds? Finally can fiscal policy be an efficient economic stabilizing tool?

The second chapter relies on a recent econometric technique to clearly identify the outcome from a new policy that agents in the economy did not know about. The results have shown that spending shocks have Keynesian effects, meaning that it has influenced positively private consumption and output growth. On the other hand sudden change in government revenues implies non-Keynesian effects since both consumption (and imports) and growth increase. The results of spending shock are common to major studies but those concerning public revenues shocks are quite surprising and deserve deeper analysis. Several factors contribute to the non-Keynesian effects of public revenues shocks. First, these results regarding public revenues, simply confirm that the public sector is the main economic agent and also private sector is under-developed. The lack of a strong private sector partially explains the fact whenever public revenues increase absorption follows an identical path; the general state being the main employer in the formal sector. The second factor identified is the weakness of automatic stabilizers in

developing countries. This weakness is reflected through the fact that impulse responses of revenue shocks last quite long (compare to what is observed in industrial countries). This duration demonstrates that revenues are not flexible indicating the incapacity for government to re-adapt its fiscal policy to changes in the real economy. The final factor is related to the lack of credibility of public authorities. This causes behavioural strategies such as "voracity effects" obliging government to spend any revenue "windfall". All these effects teach us that developing countries have reached "equilibrium state" where agents do not trust their public authorities and these policy makers being aware of that adapt their behaviour in order to appear less suspicious. The overall outcome being the fact that fiscal policy in developing countries remains "unconventional".

Chapter 3 had analyzed the relation between fiscal policies in both industrial and emerging economies and the access to international private capital for these fast growing emerging countries. The early stages of the recent global economic crisis in 2008 have seen capital outflow from emerging economies. Indeed a "global crowding out" consisting in capital flows being attracted by industrial countries' governments in huge need of capital. Developing countries' fiscal imbalances also plays negatively against capital inflows. This chapter's results confirm and also complete previous findings stating that "push factors" (see supra) are the most important determinants for capital flows. Henceforth among the "push factors" one will need to include the fiscal stance in advanced countries as a key determinant of investment flows toward the developing world. The non-linear relationship discovered between capital flows and fiscal imbalances in industrial countries shows up that above a certain level of debt and deficit investment flows to developing countries enter into a new paradigm. A country, whatever its level of development, cannot indefinitely keeps large fiscal deficits (and debt) without raising investors' concern. The recent situation in several European member countries (Greece, Spain, Ireland and recently Portugal) constitutes an important evidence proving that fiscal sustainability is not a unique matter for non-industrialized economies.

As extensively stated in previous analysis, fiscal policy in developing countries (African and Latin American countries) have remained procyclical across decades (Chapter 4). It has been true that fiscal policies were imprudent and even in some situation (especially

during the late 1980s where strict restrictive fiscal policies were advocated) these policies exacerbate the cyclical crises. However since early 2000 several developing countries (African and Latin-American) learnt from past and "painful" experience. Progressively many of them started shifting toward more prudent fiscal policies. This change will provide them with enough "budget space" in terms of resources to support the real economy in case their countries face severe economic downturn. Nonetheless developing countries are at the early stages of this transition, since only a limited number of them actually start implementing countercyclical policies. The other group of countries is still on the medium stage where fiscal policy is rather acyclical. Another aspect of this transition period is that countries running countercyclical policies use spending on social sector (and not that much on investment) as the main stabilizing tool. These new "disciplined policies" have to be encouraged and backed, otherwise a return toward procyclical strategies might be a serious threat on the poverty alleviation objective and on the whole economic development process (as the result suggest that procyclical policies increase output volatility).

This dissertation has shown that fiscal policies in developing countries suffer from a lack of credibility and a weak trust relationship between policy makers and tax payers, these situations ending with severe inefficiencies. Deep reforms on institutional framework and implementation of clear rules will help to mitigate these adverse effects. For instance and like India did recently in 2003, that implemented a fiscal rule policy, is a possible way other countries could explore. However while implementing fiscal rules one should care about flexibility in order to avoid situations where the economy needs a stimulus and the law prevents authorities to do so. Recent initiatives like PEMFA and MTEF are part of this framework that aims at strengthening fiscal institution; and future research may evaluate their real impact in developing countries' policies.

Another aspect of this dissertation has proved that despite the low efficiency of government budgetary interventions things are changing and getting better in the developing world. Even if industrial countries are their main competitors for the access to capital, the results show a new tendency and a birth of a new paradigm. Developing countries (EMEs) running sounder fiscal policies and growing at the faster rate seems to

reverse the traditional situation and to be perceived as safer shelter by international investors. On the same vein, and contrary to the common view, developing countries have learnt a lot from the past. Fiscal policies are getting more disciplined and flexible across countries.

To be sustainable all these great achievement alone are not enough to the ultimate development objectives. Private sector and private savings strengthening are some of the key element essential to lighten the fiscal efforts necessary to stabilize the macroeconomic environment.

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Résumé :

La réflexion sur l'utilisation de la politique budgétaire comme outil de stabilisation et de relance connaît un net regain d'intérêt ces dernières années. Après près de trois décennies qui ont vu la dominance des idées néo-classique, la récente crise financière des années 2008 a consacré le retour aux idées keynésiennes sur l'efficacité de l'outil budgétaire. Cette thèse s'intéresse à ce thème et essaie de caractériser la politique budgétaire dans le contexte des pays en développement et son objectif final est de préciser dans quelle mesure cet outil de politique économique serait efficace pour ces pays. Le chapitre 2 traite de la question des effets des politiques budgétaires surprises. Autrement dit, et à partir d'une modélisation en VAR structurels, cette partie se pose la question de savoir si le budget peut être utilisé de façon surprise pour relancer une économie et quels sont les défis que pose une telle mesure dans le contexte d'une économie en développement. Le troisième chapitre à partir d'un modèle de gravité analyse les relations entre la situation budgétaire dans les économies avancées ainsi que celle des pays émergents et les flux d'investissement vers les économies à revenu intermédiaire. Cette étude montre qu'un effet d'éviction entre pays (développés et émergents) existe mais aussi que l'économie mondiale tend vers un nouveau paradigme. Le dernier chapitre quant à lui étudie la cyclicité des politiques budgétaires pour un échantillon de pays d'Afrique subsaharienne et d'Amérique latine. La méthode choisie a permis de suivre l'évolution de la procyclicité des politiques budgétaires d'année en année et de montrer que les pays en développement surtout africains progressivement adoptent des politiques de plus en plus disciplinées et prudentes.

Abstract:

The use of fiscal policy as a stabilization and stimulus tool face a renewed interest from analyst and policy makers. After almost three decades where neo-classical ideas were dominant, the recent financial crisis (late 2007) marked the reborn of Keynesian ideas on the importance of the State budget during economic downturns. This dissertation focuses on this issue and provides with stylized facts of fiscal policies in developing economies, and the main aim being to be able to say whether fiscal policy is an efficient political economy tool. Chapter 2 focuses on the issue of unanticipated fiscal measures on the economy. Using a structural VAR approach it investigates whether unanticipated budget measures can be used to stimulate a declining economy and what kind of challenges and threats this strategy imposes to public authorities. Chapter 3, relying on a gravity model, analyses the relationship between emerging and advanced economies fiscal aggregates and capital flows. It shows that there exists a "global" crowding out effect of investment towards emerging markets and, most important is that world economy is entering into a new paradigm. The last chapter from a panel of Sub-Saharan African and Latin American economies studies the issue of fiscal procyclicality. The empirical strategy has allowed us on a yearly basis to characterise the cyclical behaviour of fiscal policies in both set of countries. It has been shown that developing countries especially African ones are adopting progressively more prudent and disciplined policies.

Keywords: Fiscal Policy, Developing countries, Shocks, Procyclicality, panel Structural VAR models, Gravity models, Local Gaussian-weighted ordinary Least squares estimates.